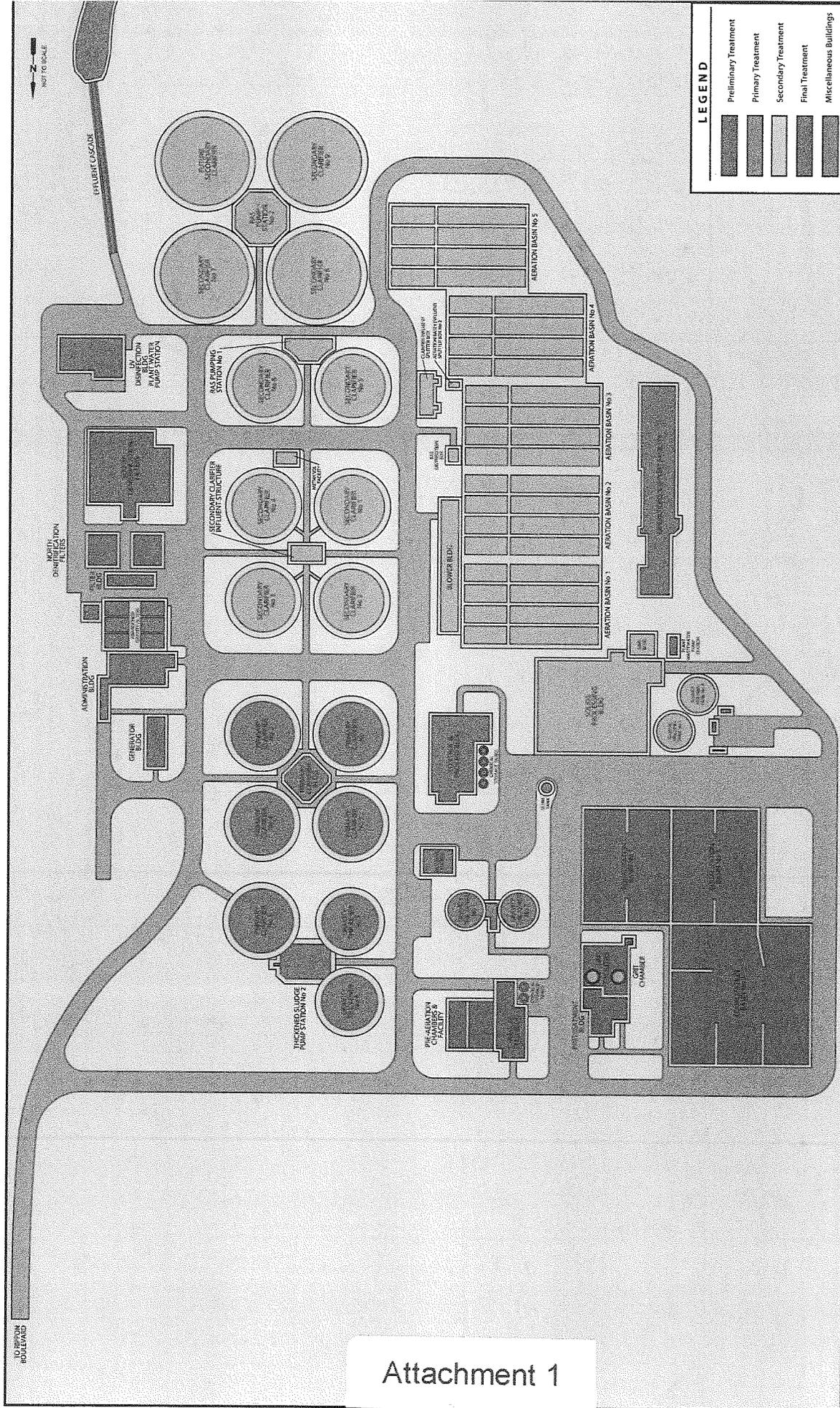


## VA0025101 Attachments to the Fact Sheet

Attachment 1	Facility Schematic
Attachment 2	No Exposure Inspection and Approval Letter
Attachment 3	Topographic Map
Attachment 4	Site Inspection from September 21, 2012
Attachment 5	Planning Statement
Attachment 6	Dissolved Oxygen Criteria for Class II Waters
Attachment 7	Water Quality Criteria and Wasteload Allocation Analysis
Attachment 8	Instream Monitoring Report
Attachment 9	Documentation for the Summer Weekly Average Ammonia Limitation
Attachment 10	DGIF Database Search
Attachment 11	Site Specific Dilution Study and Nearfield Mix Analysis
Attachment 12	Ammonia as N Dilution and Decay
Attachment 13	Potomac Embayment WLA Study
Attachment 14	Statistical Limitation Analysis
Attachment 15	Whole Effluent Toxicity Summary
Attachment 16	Sludge Analysis Reports
Attachment 17	Public Notice



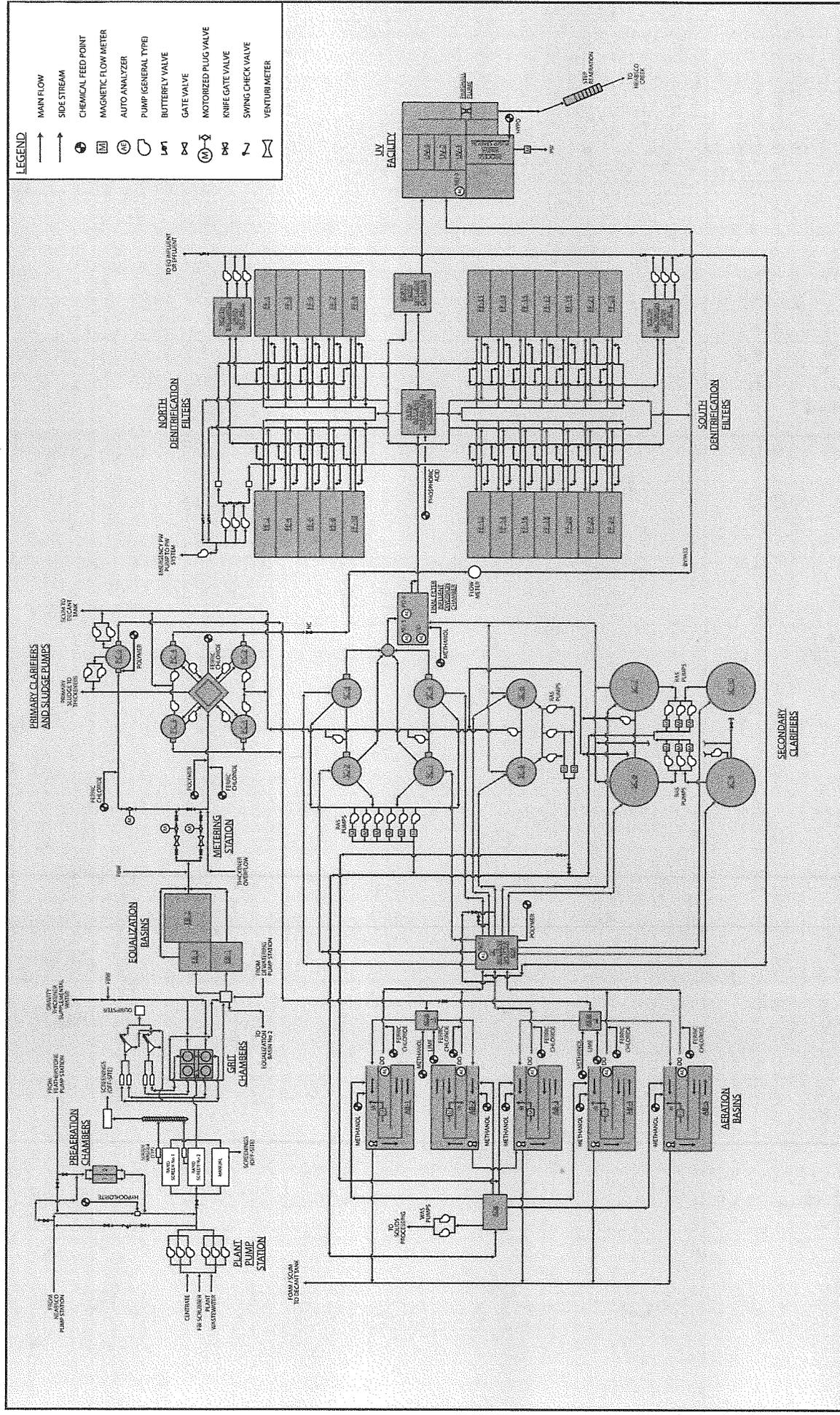
**LEGEND**

[Dark Grey Box]	Preliminary Treatment
[Medium Grey Box]	Primary Treatment
[Light Grey Box]	Secondary Treatment
[White Box]	Final Treatment
[Dark Grey Box]	Miscellaneous Buildings

Prince William County Service Authority  
 H.L. Mooney Water Reclamation Facility  
 Figure 1-2 - Site Plan

Attachment 1



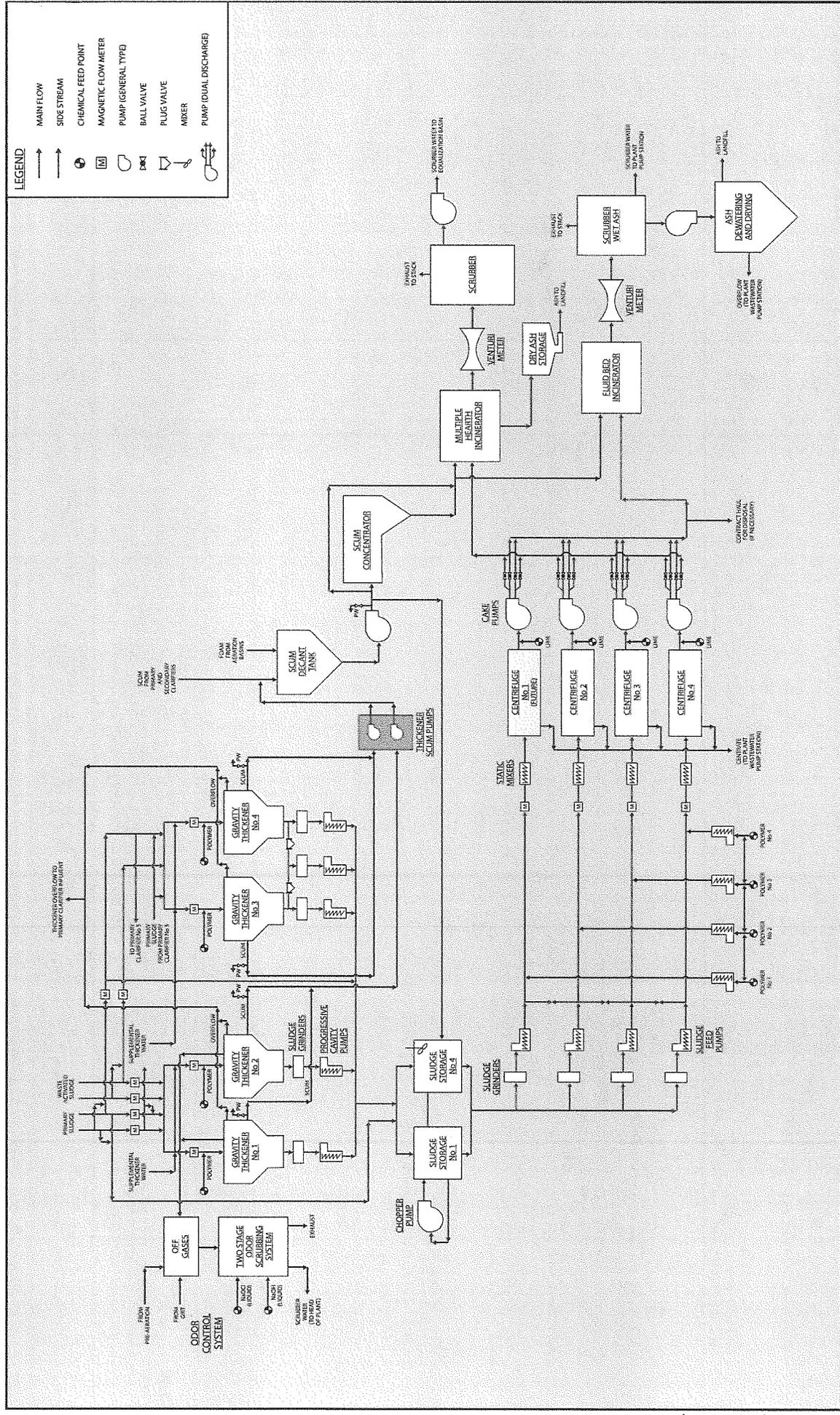


**LEGEND**

→	MAIN FLOW
⇨	SIDE STREAM
⊕	CHEMICAL FEED POINT
⊖	MAGNETIC FLOW METER
⊙	AUTO ANALYZER
⊕	PUMP (GENERAL TYPE)
⊖	BUTTERFLY VALVE
⊗	GATE VALVE
⊕	MOTORIZED PLUG VALVE
⊖	KNIFE GATE VALVE
⊗	SWING CHECK VALVE
⊕	VENTURI METER

Prince William County Service Authority  
 H.L. Mooney Water Reclamation Facility  
 Figure 2-2  
 Liquids Process Flow Diagram

CA1199031 VHL Mooney Liquids Process Flow Diagram - Revised 10/22/10 - 5 - P.1111



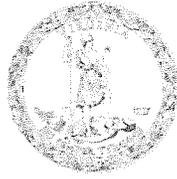
**LEGEND**

	MAIN FLOW
	SIDE STREAM
	CHEMICAL FEED POINT
	MAGNETIC FLOW METER
	PUMP (GENERAL TYPE)
	BALL VALVE
	PLUG VALVE
	MIXER
	PUMP (DUAL DISCHARGE)

Prince William County Service Authority  
 H.L. Mooney Water Reclamation Facility

Figure 2-? Solids Process Flow Diagram





# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

### NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193

(703) 583-3800 Fax (703) 583-3821

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Molly Joseph Ward  
Secretary of Natural Resources

David K. Paylor  
Director

Thomas A. Faha  
Regional Director

April 11, 2014

Mr. Stephen M. Bennett  
Deputy Director, Water Reclamation  
H.L. Mooney Advanced Water Reclamation Facility  
P.O. Box 2266  
Woodbridge, VA 22195-2266

Re: Termination of Virginia Pollutant Discharge Elimination System (VPDES) General Permit for Storm Water Discharges Associated with Industrial Activity – VAR051424

Dear Mr. Bennett:

Based on a site review conducted February 28, 2014, the Department of Environmental Quality - Northern Regional Office has approved a no-exposure certification request received on January 15, 2014, for the H.L. Mooney Advanced Water Reclamation Facility. Pursuant to 9VAC25-151-50 C, an owner covered by the VPDES General Permit for Storm Water Discharges Associated with Industrial Activity who is later able to file a no-exposure certification to be excluded from permitting is no longer authorized by nor required to comply with this permit. Additionally, if the owner is no longer required to have permit coverage due to a no-exposure exclusion, the owner is not required to submit a notice of termination. As such, the Department of Environmental Quality has approved the termination of the Permit referenced above. Termination of this permit does not prohibit the discharge of storm water from the H.L. Mooney Advanced Water Reclamation Facility. Additionally, termination of this permit does not change or alter terms and conditions of the facility's individual permit nor does this termination relieve the facility from complying with the individual permit (VA0025101). Termination of this permit is effective thirty days from the date of this notification (May 11, 2014) unless you provide an objection in accordance with one of the two paragraphs below.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have thirty days from the date you received this decision within which to appeal this decision by filing a notice of appeal in accordance with the Rules of the Supreme Court of Virginia with the Director, Virginia Department of Environmental Quality.

Alternatively, any owner under §§ 62.1-44.16, 62.1-44.17 and 62.1-44.19 of the State Water Control Law aggrieved by any action of the State Water Control Board taken without a formal hearing, or by inaction of the Board, may demand in writing a formal hearing of such owner's grievance, provided a petition requesting such hearing is filed with the Board. Said agreement must meet the requirements set forth in §1.23 (b) of the Board's Procedural Rule No. 1.

Please note that should a discharge arise in accordance with 9VAC25-31-100, Application for a Permit, the H.L. Mooney Advanced Water Reclamation Facility shall be responsible for complying with Virginia State Water Control Laws and Regulations. Additionally, coverage may be necessary at a later date should changes to regulations be implemented or site activities change.

Attachment 2

Should you have any questions or need any additional information, please contact Susan Mackert at (703) 583-3853 or by email at [susan.mackert@deq.virginia.gov](mailto:susan.mackert@deq.virginia.gov).

Sincerely,



Bryant Thomas  
Water Permits and Planning Manager

Enc: Site memorandum

cc: File – VAR051424  
Sharon Allen – DEQ Compliance Inspector (without enclosure)  
Becky Vice – DEQ Compliance Auditor (without enclosure)  
Evelyn Mahieu – Director, Environmental Services and Water Reclamation (with enclosure)  
Maureen O’Shaughnessy – Prince William County Service Authority (with enclosure)

# MEMORANDUM

## VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

### NORTHERN REGIONAL OFFICE

13901 Crown Court

Woodbridge, VA 22193

SUBJECT: H.L. Mooney Advanced Water Reclamation Facility (VAR051424)

TO: File

FROM: Susan Mackert

DATE: April 7, 2014

COPIES: Mr. Stephen M. Bennett – Deputy Director, Water Reclamation  
Ms. Evelyn Mahieu – Director, Environmental Services and Water Reclamation  
Ms. Maureen O'Shaughnessy – Prince William County Service Authority

A site visit was performed on February 28, 2014, to assess drainage patterns, point source discharge locations, and permit applicability for the referenced facility. Additionally, the site visit was conducted to verify information provided in a no-exposure certification request received January 15, 2014.

#### General Site Observations

- The facility operates under SIC Code 4952 (wastewater treatment) which falls under Sector T – Treatment Works of the Virginia Pollutant Discharge Elimination System (VPDES) General Permit for Storm Water Discharges Associated with Industrial Activity (SWGIP).
- The facility is an advanced wastewater treatment plant with a design flow of 24 Million Gallons Per Day (MGD).
- The facility comprises approximately 38 acres with paved and grass surfaces and consists of office buildings and typical wastewater treatment process units.
- The facility has seven storm water outfalls.
  - Storm water Outfall 001 is located adjacent to the facility's final effluent discharge point for VPDES permit VA0025101 (photo 1) at the southeast corner of the plant. The drainage area to this outfall is 5.75 acres of which 2.28 acres are considered impervious. The drainage area consists of paved areas adjacent to the secondary clarifiers (photos 2 – 3) and a grassy area adjacent to the UV building (photo 4). Storm water flows over heavy rip rap before discharging to Neabsco Creek.
  - Storm water Outfall 002 is located on the east side of the facility behind the existing administration building (photo 5) with discharge to Neabsco Creek. The drainage area to this outfall is 5.25 acres of which 3.15 acres are considered impervious. At the time of the site visit, all drains to storm water Outfall 002 were blocked due to construction activities. Once construction is completed, the drainage area to storm water Outfall 002 will consist of runoff from the new administration and laboratory building and its associated parking lot. It should be noted that storm water Outfall 002 is also regulated under the Virginia Storm Water Management Program (VSMP) for discharges of storm water from construction activities.
  - Storm water Outfall 003 is located on the south end of the facility. The drainage area to this outfall is 0.95 acres of which 0.70 acres are considered impervious. The drainage area consists of paved areas adjacent to the aeration basins. Storm water flows over heavy rip rap before discharging to Neabsco Creek (photos 6 – 7).
  - Storm water Outfall 004 is the outlet of a storm water pond located on the west side of the facility (photo 8) which discharges to Neabsco Creek. The drainage area to this outfall is 3.85 acres of which 1.8 acres are considered impervious. The drainage area to this outfall consists of paved areas adjacent to the preliminary treatment and ash handling areas (photos 9 – 10) as well as a paved road (photos 11 – 12).

- Storm water Outfall 005 is located on the northwest corner of the facility (photo 13) with discharge to Neabsco Creek. The drainage area to this outfall is 15.25 acres of which 1.9 acres are considered onsite impervious and 0.60 acres are considered off site impervious. The drainage area to this outfall consists of paved and grassy areas adjacent to the headworks and preliminary treatment area (photos 14 – 15).
  - Storm water Outfall 006 is located on the west side of the facility (photo 16) with discharge to Neabsco Creek. The drainage area to this outfall is 0.5 acres of which 0.35 acres are considered impervious. The drainage area consists of a small paved and grassy area adjacent to the solids building (photo 17).
  - Storm water Outfall 007 is located on the southwest side of the facility (photo 18) with discharge to Neabsco Creek. The drainage area to this outfall is 0.7 acres of which 0.7 acres are considered impervious. The drainage area to this outfall consists of paved area adjacent to the aeration basins (photo 19).
- Areas of potential storm water contamination include the ash handling area (photos 20 – 21), septage hauler unloading area (photo 22), the vehicle wash area (photo 23), and a loading dock area (photo 24). Storm water from all of these areas is directed to an in plant pump station and is returned to the headworks. As such, there is no reasonable potential for these areas to impact storm water quality.

#### **Staff Recommendations**

The requirements found within 9VAC25-151 are applicable to point source storm water discharges associated with industrial activity. Based on observations made during the site visit, it is staff's best professional judgement that there is no reasonable potential for the industrial activity at the H.L. Mooney Advanced Water Reclamation Facility to impact storm water quality. Storm water discharges are comprised primarily of runoff from paved and grassy areas. Discharges such as this are currently exempt from coverage under the general industrial storm water permit. Any areas of potential storm water contamination are directed to an in plant pump station and are returned to the headworks thereby not impacting storm water quality.

The facility maintains coverage under the VPDES General Permit for Storm Water Discharges Associated with Industrial Activity (VAR051424). Pursuant to 9VAC25-151-50 C, an owner covered by the VPDES General Permit for Storm Water Discharges Associated with Industrial Activity who is later able to file a no-exposure certification to be excluded from permitting is no longer authorized by nor required to comply with this permit. Additionally, if the owner is no longer required to have permit coverage due to a no-exposure exclusion, the owner is not required to submit a notice of termination. Please note that if a discharge arises in accordance with 9VAC25-31-100, Application for a Permit, the H.L. Mooney Advanced Water Reclamation Facility shall be responsible for complying with Virginia State Water Control Law and Regulations. Additionally, coverage may be necessary at a later date should changes to regulations be implemented or site activities change.



Photo 1. Storm water Outfall 001. Flow is in the direction of the arrow to Neabsco Creek.



Photo 2. Drainage area to storm water Outfall 001.



Photo 3. Drainage area to storm water Outfall 001.



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Photo 5. Storm water Outfall 002.



Photo 6. Storm water Outfall 003.



Photo 7. Storm water Outfall 003. Flow is in the direction of the arrow to Neabsco Creek.



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Photo 11. Drainage area to storm water Outfall 004.



Photo 12. Flow from the drainage from area shown in photo 11 enters the corrugated pipe which then enters the storm water pond shown in photo 8.



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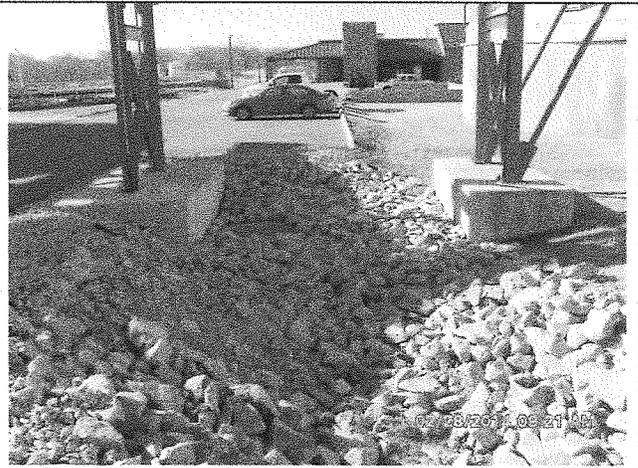


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Photo 20. Ash handling area.



Photo 21. Trench drain adjacent to ash handling area which is directed to an in plant pump station and is returned to the headworks.



Photo 22. Septage hauler unloading area.



Photo 23. Vehicle wash area.



Photo 24. Loading dock area.

# MEMORANDUM

## VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

### NORTHERN REGIONAL OFFICE

13901 Crown Court

Woodbridge, VA 22193

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TO: File

FROM: Susan Mackert

DATE: April 7, 2014

COPIES: Mr. Stephen M. Bennett – Deputy Director, Water Reclamation  
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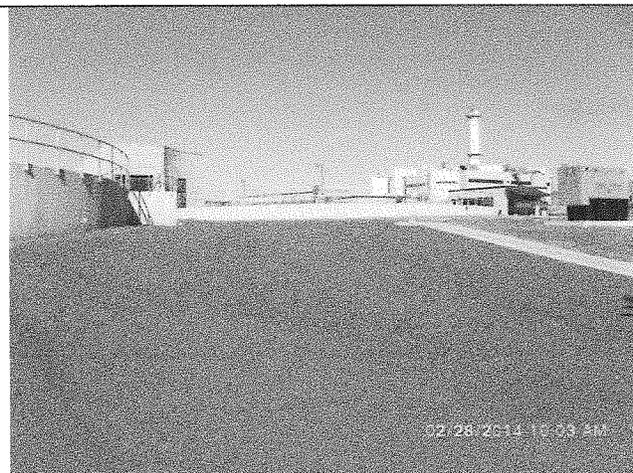


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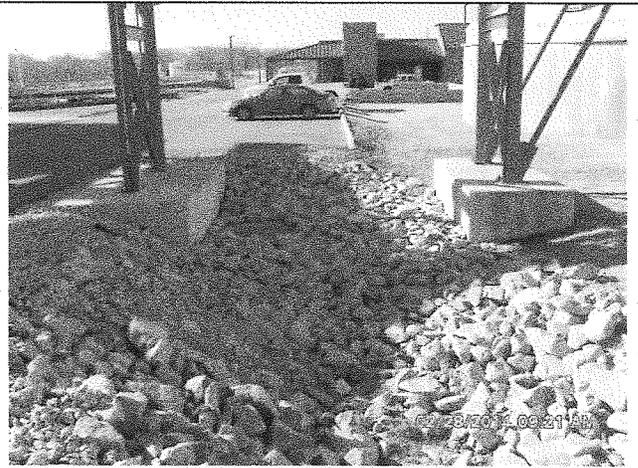


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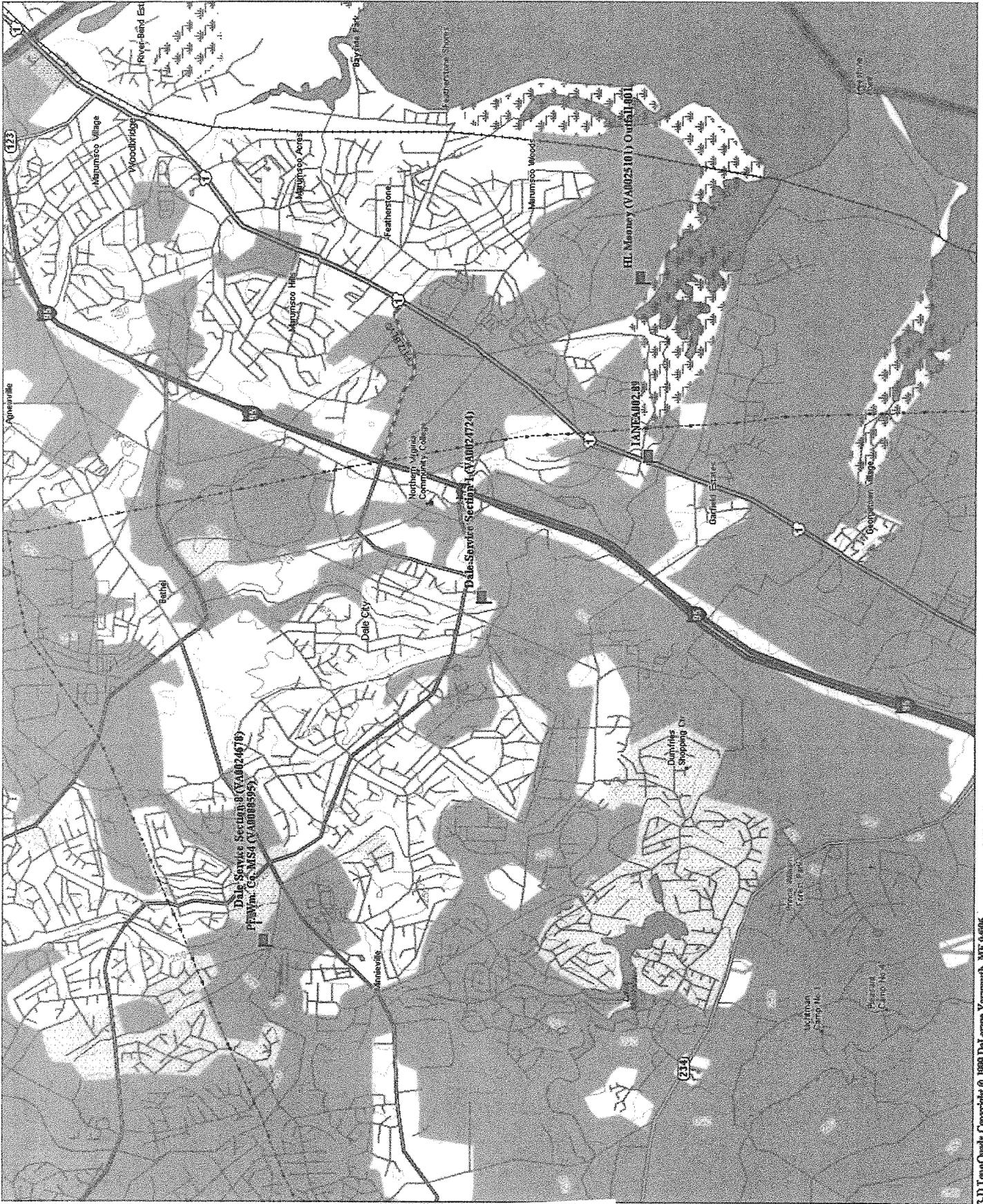
Photo 22. Septage hauler unloading area.



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Photo 24. Loading dock area.



3-D TopoQuad Copyright © 1999 DeLorme Yarmouth, ME 04806 | 1500 ft Scale: 1 : 50,000 Detail: 12.0 Datum: WGS84

Attachment 3



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193

(703) 583-3800 Fax (703) 583-3821

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Douglas W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

Thomas A. Faha  
Regional Director

October 19, 2012

Mr. Charles Weber  
Director of Engineering and Water Reclamation  
Prince William County Service Authority  
P.O. Box 2266  
Woodbridge, VA 22195

Re: **H.L. Mooney Water Reclamation Facility, Permit #VA0025101**

Dear Mr. Weber:

Attached is a copy of the technical and laboratory inspection report generated from observations made on September 21, 2012 while conducting a Facility Technical Inspection at the H.L. Mooney – Water Reclamation Facility (WRF). This letter is not intended as a case decision under the Virginia Administrative Process Act, Va. Code § 2.2-4000 *et seq.* (APA). The compliance staff would like to thank Mr. Robert Litzinger for his time and assistance during the inspection.

Additional inspections may be conducted to confirm that the facility is in compliance with permit requirements.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at (703) 583-3882 or by e-mail at [Sharon.Allen@deq.virginia.gov](mailto:Sharon.Allen@deq.virginia.gov).

Sincerely,

A handwritten signature in cursive script that reads 'Sharon Allen'.

Sharon Allen  
Environmental Specialist II

Electronic copy sent:

Compliance Manager, Compliance Auditor, Permits / DMR File – DEQ

EPA- Region III

Steve Bennett, Robert Litzinger – H.L. Mooney WRF

**DEQ  
WASTEWATER FACILITY INSPECTION REPORT**

PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
<b>VA0025101</b>	<b>July 1, 2009</b>		<b>Jun 30, 2014</b>
Facility Name		Address	Telephone Number
<b>H.L. Mooney Water Reclamation Facility</b>		<b>1851 Rippon Blvd. Woodbridge, VA</b>	<b>(703) 393-2065</b>
Owner Name		Address	Telephone Number
<b>Prince William County Service Authority</b>		<b>PO Box 2266 Woodbridge, VA 22195</b>	<b>(703) 335-7929</b>
Responsible Official		Title	Telephone Number
<b>Charles R. Weber</b>		<b>Director of Engineering &amp; Water Reclamation</b>	<b>(703) 335-7929</b>
Responsible Operator		Operator Cert. Class/number	Telephone Number
<b>Robert Litzinger</b>		<b>Class I; 1909000168</b>	<b>(703) 393-2065</b>

TYPE OF FACILITY:

DOMESTIC				INDUSTRIAL			
Federal		Major	<b>X</b>	Major		Primary	
Non-federal	<b>X</b>	Minor		Minor		Secondary	

INFLUENT CHARACTERISTICS:

DESIGN:

	Flow	<b>24 MGD</b>	
	Population Served	<b>250,000</b>	
	Connections Served	<b>85,000</b>	
	BOD <sub>5</sub> (June-Aug 2012)	<b>215</b>	
	TSS (June-Aug 2012)	<b>218</b>	

EFFLUENT LIMITS: SPECIFY UNITS

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
<b>Flow (MGD)</b>		<b>18</b>	<b>NL</b>	<b>pH (S.U.)</b>	<b>6.0</b>		<b>9.0</b>
<b>DO</b>	<b>6.0</b>			<b>E. coli, n/100mls (geometric mean)</b>		<b>126</b>	
<b>cBOD<sub>5</sub></b>		<b>5</b>	<b>8</b>	<b>TSS</b>		<b>6</b>	<b>9</b>
<b>NH<sub>3</sub>-N (Apr-Oct)</b>		<b>1.0</b>	<b>4.4</b>	<b>NH<sub>3</sub>-N (Nov-Jan)</b>		<b>NL</b>	<b>NL</b>
<b>NH<sub>3</sub>-N (Feb-Mar)</b>		<b>4.6</b>	<b>5.5</b>	<b>Nitrate + Nitrite</b>		<b>NL</b>	<b>NA</b>
<b>TKN</b>		<b>NL</b>	<b>NA</b>	<b>Total N</b>		<b>NL</b>	<b>NA</b>
<b>Total Phosphorus</b>		<b>.18</b>	<b>.27</b>				

	Receiving Stream	<b>Neabsco Creek</b>	
	Basin	<b>Potomac River</b>	
	Discharge Point (LAT)	<b>38° 36' 39"</b>	
	Discharge Point (LONG)	<b>77° 16' 13"</b>	

**Problems identified at last inspection: July 7, 2012**

	Corrected	Not Corrected
1. Influent screenings that fall to the ground while the dumpster is being moved or emptied must be cleaned up and disposed of properly.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. The plants growing along the side of the step cascade structure are overgrowing the walkway and may cause damage as they grow. The plants should be removed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. pH- The buffer values read off the meter during calibration are not recorded on the bench sheets.  The bench sheet should include the analysis method number and identify the edition of Standard Methods that is the source of the method.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. DO- The bench sheet should include the analysis method number and identify the edition of Standard Methods that is the source of the method.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. The auto sampler temperature was recorded as being 0.1 °C on 6/28/10. The recorded sampler temperature was 2.4 on 6/27/10 and 3.7 on 6/29/10. If adjustments were made to the sampler, it should be noted in log book or on data sheet.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## SUMMARY- SEPTEMBER 2012

### COMMENTS:

- DEQ does not object to operators analyzing DO at the top of the step aeration structure in the wintertime if conditions make the steps/path to the bottom of the structure unsafe (e.g. due to ice or snow).

The facility must have an SOP outlining conditions under which the DO will be analyzed at the top of the step aeration structure rather than the bottom; and the sample location should be noted on the operator's bench sheet.

- The EPA published their Final Rule on the latest Methods Update to 40 CFR Part 136 in the Federal Register on May 18, 2012. In this update, EPA has changed the way in which approved methods in Standard Methods are to be identified.

Only the most recent version of a method is EPA approved. Permittees referencing Standard Methods must list the method number followed by the year of publication (e.g. pH = SM 4500-H+ B 1992).

This change is applicable to documentation of the field analyses conducted by operators as well as to analyses performed in a certified laboratory. The method reference should be updated on operator log sheets and SOPs.

- The WRF staff is commended for keeping an orderly and well-maintained facility.

### REQUEST for CORRECTIVE ACTION:

- None at this time.

Virginia Department of Environmental Quality

FOCUSED CEI TECH/LAB INSPECTION REPORT

<b>FACILITY NAME: H.L. Mooney WRF</b>		<b>INSPECTION DATE: September 21, 2012</b>	
		<b>INSPECTOR: S. Allen</b>	
<b>PERMIT No.: VA0025101</b>		<b>REPORT DATE: October 19, 2012</b>	
<b>TYPE OF FACILITY:</b> <input checked="" type="checkbox"/> Municipal <input checked="" type="checkbox"/> Major <input type="checkbox"/> Industrial <input type="checkbox"/> Minor <input type="checkbox"/> Federal <input type="checkbox"/> Small Minor <input type="checkbox"/> HP <input type="checkbox"/> LP	<b>TIME OF INSPECTION:</b>	Arrival <b>0845</b>	Departure <b>1120</b>
	<b>TOTAL TIME SPENT (including prep &amp; travel)</b>	<b>25 hours</b>	
<b>PHOTOGRAPHS:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>UNANNOUNCED INSPECTION?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>REVIEWED BY / Date:</b>  <div style="text-align: center;">             10/18/12         </div>			
<b>PRESENT DURING INSPECTION:</b>		<b>Robert Litzinger- Operations Manager, H.L. Mooney WRF</b>	

**TECHNICAL INSPECTION**

1. Has there been any new construction? • If so, were plans and specifications approved? <u>Comments: CTO issued November 8, 2012.</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Is the Operations and Maintenance Manual approved and up-to-date? <u>Comments: Received Oct 24, 2011.</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3. Are the Permit and/or Operation and Maintenance Manual specified licensed operator requirements being met? <u>Comments:</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
4. Are the Permit and/or Operation and Maintenance Manual specified operator staffing requirements being met? <u>Comments:</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5. Is there an established and adequate program for training personnel? <u>Comments:</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6. Are preventive maintenance task schedules being met? <u>Comments: Work orders are generated weekly, monthly, and yearly.</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
7. Does the plant experience any organic or hydraulic overloading? <u>Comments:</u> <b>In Feb 2011, the facility experienced a partial bypass of the Denitrification Filters. The bypass resulted from I&amp;I from a rain event that occurred while the majority of units were off line as part of a plant performance test. The I&amp;I hydraulically overloaded the units that were on-line, resulting in solids lost from the clarifiers blinding the filters. Approximately 141,000 gallons of secondary effluent bypassed the filters over a period of three hours (3:50 am – 6:50 am). The flow was represented in the facility's composite sample for that day.</b>  <b>Under normal operations the plant does not experience hydraulic overloading. High flows are generally controlled by use of the EQ basins.</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No

8. Have there been any bypassing or overflows since the last inspection? <u>Comments:</u> <b>See incident described above. Additionally, the Denite filters were bypassed several times during construction with DEQ approval.</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
9. Is the standby generator (including power transfer switch) operational and exercised regularly? <u>Comments:</u> <b>Two new generators (2.5 megawatts each) not yet in service; are in the final programming stages; will be tested monthly under load.</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No
10. Is the plant alarm system operational and tested regularly? <u>Comments:</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
11. Is sludge disposed of in accordance with the approved sludge management plan? <u>Comments:</u> <b>Incinerated.</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
12. Is septage received? • If so, is septage loading controlled, and are appropriate records maintained? <u>Comments:</u> <b>Records kept by lab staff</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
13. Are all plant records (operational logs, equipment maintenance, industrial waste contributors, sampling and testing) available for review and are records adequate? <u>Comments:</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
14. Which of the following records does the plant maintain? <input checked="" type="checkbox"/> Operational logs <input checked="" type="checkbox"/> Instrument maintenance & calibration <input checked="" type="checkbox"/> Mechanical equipment maintenance <input type="checkbox"/> Industrial Waste Contribution (Municipal facilities) <u>Comments:</u>	
15. What does the operational log contain? <input checked="" type="checkbox"/> Visual observations <input type="checkbox"/> Flow Measurement <input type="checkbox"/> Laboratory results <input checked="" type="checkbox"/> Process adjustments <input type="checkbox"/> Control calculations <input type="checkbox"/> Other (specify) _____ <u>Comments:</u>	
16. What do the mechanical equipment records contain? <input checked="" type="checkbox"/> As built plans and specs <input checked="" type="checkbox"/> Manufacturers instructions <input checked="" type="checkbox"/> Lubrication schedules <input type="checkbox"/> Spare parts inventory <input checked="" type="checkbox"/> Equipment/parts suppliers <input type="checkbox"/> Other (specify) _____ <u>Comments:</u>	
17. What do the industrial waste contribution records contain (Municipal only)? <input type="checkbox"/> Waste characteristics <input type="checkbox"/> Impact on plant <input type="checkbox"/> Locations and discharge types <input type="checkbox"/> Other (specify) <u>NA</u> <u>Comments:</u> <b>PWCSA has been involved in the development of a pretreatment ordinance for Prince William County and is voluntarily pursuing implementation of a pretreatment program.</b>	
18. Which of the following records are kept at the plant and available to personnel? <input checked="" type="checkbox"/> Equipment maintenance records <input checked="" type="checkbox"/> Operational log <input checked="" type="checkbox"/> Industrial contributor records <input checked="" type="checkbox"/> Instrumentation records <input checked="" type="checkbox"/> Sampling and testing records <u>Comments:</u>	
19. List records not normally available to plant personnel and their location: <u>Comments:</u> <b>None</b>	
20. Are the records maintained for the required time period (three or five years)? <u>Comments:</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

**UNIT PROCESS EVALUATION SUMMARY SHEET**

<u>UNIT PROCESS</u>	<u>APPLICABLE</u>	<u>PROBLEMS*</u>	<u>COMMENTS</u>
Sewage Pumping	Y		<i>Pump station for plant return flows. Added to incoming influent prior to pre-aeration chambers.</i>
Screening/Comminution	Y		<i>Two mechanical band screens operate based on water level/flow differential. One manual bar screen.</i>
Grit Removal	Y		<i>Four grit removal tanks, four grit cyclone separators, and two grit classifiers. No units in use during this inspection.</i>
Oil/Water Separator	N		
Flow Equalization	Y		<i>Three EQ tanks, one 2 MG and one 4MG in service.</i>
Flow Measurement (Influent)	Y		<i>Plant influent readings are recorded at the influent metering station, representing flow that is actually entering the plant.</i>
Ponds/Lagoons	N		
Imhoff Tank	N		
Primary Sedimentation	Y		<i>Five 95 foot diameter primary clarifiers, two in service. Sludge is sent to gravity thickeners.</i>
Flocculation	Y		<i>Ferric acid is added for phosphorous removal.</i>
Trickling Filter	N		
Septic Tank and Sand Filter	N		
Rotating Biological Contactor	N		
Activated Sludge Aeration	N		
Biological Nutrient Removal	Y		<i>Five 4-pass basins, four basins in service. 1.5 tons lime added to aeration basins. Methanol added at final zone.</i>
Sequencing Batch Reactor			
Secondary Sedimentation	Y		<i>Nine clarifiers, four currently on line (three 125 ft diameter and one 95 foot diameter clarifiers)</i>
Flocculation	N		
Tertiary Sedimentation	N		
Filtration	Y		<i>24 Denitrification filters, 18 in service. Not currently being operated for denitrification; filtering only.</i>
Micro-Screening	N		
Activated Carbon Adsorption	N		
Chlorination	N		
Dechlorination	N		
Ozonation	N		

<b>UNIT PROCESS</b>	<b>APPLICABLE</b>	<b>PROBLEMS*</b>	<b>COMMENTS</b>
Ultraviolet Disinfection	Y		<i>Trojan 3000+</i>
Post Aeration	Y		<i>Step aeration</i>
Flow Measurement (Effluent)	Y		
Land Application (Effluent)	N		
Plant Outfall	Y		<i>No problems noted</i>
Sludge Pumping	Y		
Flotation Thickening (DAF)	N		
Gravity Thickening	Y		<i>Four thickeners, one in use. Two 95 ft diameter thickeners, two 50 ft diameter.</i>
Sludge Holding Tank	Y		<i>Two sludge storage tanks hold sludge prior to pumping to centrifuges.</i>
Aerobic Digestion	N		
Anaerobic Digestion	N		
Lime Stabilization	N		
Centrifugation	Y		<i>Three centrifuges.</i>
Sludge Press	N		
Vacuum Filtration	N		
Thermal Treatment	N		
Incineration	Y		<i>The fluidized bed incinerator is run at night; run generally completed by 12:00 noon the following day.</i>
Drying Beds	N		
Composting	N		
Land Application (Sludge)	N		

\* Problem Codes

- |                                  |  |
|----------------------------------|--|
| 1. Unit Needs Attention          | 4. Unapproved Modification or Temporary Repair |
| 2. Abnormal Influent/Effluent    | 5. Evidence of Process Upset                   |
| 3. Evidence of Equipment Failure | 6. Other (explain in comments)                 |

**INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS****Water****Preliminary treatment**

- Pre-aeration - to remove odor from influent. Odiferous air is passed through scrubbers and neutralized. Mr. Litzinger said that they had no odor complaints this year.
- Raw influent flow from pre-aeration to screening is measured by a venturi flow meter.
- Grit removal - 4 vortex grit chambers, 2 with Pista© grit and 2 with EIMCO Jeta 900 grit removal. Operators are running water through without running the grit removal equipment in order to see how much accumulates in the grit chamber basin.
- Three aerated EQ basins/tanks – two 2MG capacity, one 4MG capacity. EQ basin #1 was in service for diurnal flow equalization, EQ#3 was being drained for cleaning. EQ#2, the 4MG basin, is kept in reserve.
- Raw influent, filter backwash, and centrate combines prior to flow measurement of flow actually entering the plant at the influent metering station. The influent composite sample is collected from the 36" line to clarifiers 1-4, prior to any chemical addition.
- A separate line provides flow to the new clarifier #5. Each line has its own venturi flow meter; the flows are added to calculate the total primary flow when clarifier #5 is in use. The total primary flow is used in calculations for downstream flow-paced chemical additions. The feed line to Clarifier #5 is currently unused.

**Primary Treatment**

- Four primary clarifiers are grouped together around a common splitter box. Clarifier #5 is new with the plant expansion and is completely separate from the other four. It can also be utilized as a gravity thickener.
- The walls of the splitter box used to distribute flow between clarifiers 1-4 were raised as part of the plant expansion. This allows the flow gates to be raised enough to allow flow into clarifier #5 when desired.
- Each clarifier has sludge and sump pumps (one employee has taken upon self to get all painted and looking good). Scum is sent to the scum tank and is eventually incinerated.

**Secondary Treatment**

- Primary effluent goes to one of two splitter boxes that feed into the in-service BNR aeration basins.
- Basin #2 flow runs opposite from the other four basins. Basin #2 was out of service.
- The BNR basins are currently configured with three anoxic zones followed by a swing zone and most of the rest are aerated. Methanol is added to the final anoxic zone.
- No ferric is being added to secondary treatment at this time; Mr. Litzinger stated that they are getting biological removal of phosphorous, so they don't need to add the chemicals.
- BNR basin #3 is tied in to secondary clarifier #3, and RAS is returned to Basin #3. For all other clarifiers, RAS is returned to the RAS splitter box and distributed between the other on-line basins.
- Secondary clarifiers - Preventative maintenance is done on center wells and scum troughs weekly. Weirs are covered to prevent algae growth/buildup, cleaned every month or two.
- Secondary clarifier effluent flows into the Final Filters Influent Diversion Chamber to be distributed to the Denitrification filters in service.

## **Tertiary treatment**

- No methanol is being added to the Denitrification filters. Mr. Litzinger stated that they currently don't need to run the filters for Denitrification, and are using as regular sand filters. 24 filters (14 south Denite filters are new, 10 north Denite filters existed), 18 on line, reducing to goal of 14. Currently each backwashed every 9 days (2 per day/ night). When get to 14 on line will backwash every 7 days.
- Water in the filters was clear, but there was significant algae growth. Mr. Litzinger pointed out two filters that they have put covers over to evaluate how this would affect algae. Algae growth in the covered filters is much reduced, and staff is investigating covering all filters.
- The facility has three channels, two were in use. Each channel has 20 racks w/ 8 bulbs each, run at 100%. Burned out bulbs are changed weekly, the banks are cleaned at the same time. The auto wiper system on the sleeves is cleaned quarterly; the system receives an annual overhaul.

## **Solids**

- Secondary clarifiers - clarifier # 3 RAS is returned to Basin #3 – remaining RAS is returned to splitter box.
- The four gravity thickeners are covered for odor control. The thickeners receive solids from the primary clarifiers, WAS from the secondary clarifiers, and may receive scum from both sets of clarifiers and from the BNR basins.
- Thickened sludge is sent to sludge storage tanks, where lime is added. Polymer is added as sludge is fed to the centrifuge.
- Three centrifuges - run one at a time. Dewatered sludge drops into hoppers, and is pumped into the incinerator via hydraulic rams.
- The Fluidized Bed Incinerator (FBI) is usually run at night. Operators start the run around 7:00pm and are done by 12:00 the following day. The incinerator uses natural gas to 1250 degrees Fahrenheit, then fuel oil is used to increase to the operating temperature of 1500 -1550 deg F.
- Sludge enters from the bottom and is drawn upwards. Residual water evaporates, organic matter incinerates. Operators can process 6000 – 9500 pounds per hour.
- Ash from the incineration process is removed by a wet scrubber system and becomes a slurry, which is sent to one of three ash basins. Ash settles out, water is drawn off and returned to the plant waste pump station.
- The ash basin overflow is discharged to the effluent trench drain and flows by gravity back to the Plant Wastewater Pump Station.
- Once water is gone, ash moved w/ front end loader to covered concrete pad, where it finishes drying and eventually hauled to landfill.
- The plant's older multiple hearth incinerator remains on site. This incinerator has not been used in about eight years; it was decommissioned because the process generates cyanide while in use, which kills off the plant bugs.

**LABORATORY INSPECTION**

**PRESENT DURING INSPECTION: Mike Lawson; Robert Litzinger- H.L. Mooney WRF**

<p>1. Do lab records include sampling date/time, analysis date/time, sample location, test method, test results, analyst's initials, instrument calibration and maintenance, and Certificate of Analysis?</p> <p><input checked="" type="checkbox"/> Sampling Date/Time   <input checked="" type="checkbox"/> Analysis Date/Time   <input checked="" type="checkbox"/> Sample Location   <input checked="" type="checkbox"/> Test Method   <input checked="" type="checkbox"/> Test Results</p> <p><input checked="" type="checkbox"/> Analyst's Initials   <input checked="" type="checkbox"/> Instrument Calibration &amp; Maintenance</p> <p><input type="checkbox"/> Chain of Custody   <input type="checkbox"/> Certificate of Analysis</p>	
<p>2. Are Discharge Monitoring Reports complete and correct? Month(s) reviewed: _____ September 2012</p>	<p><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No</p>
<p>3. Are sample location(s) according to permit requirements (after all treatment unless otherwise specified)?</p>	<p><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No</p>
<p>4. Are sample collection, preservation, and holding times appropriate; and is sampling equipment adequate?</p>	<p><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No</p>
<p>5. Are grab and composite samples representative of the flow and the nature of the monitored activity?</p>	<p><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No</p>
<p>6. If analysis is performed at another location, are shipping procedures adequate? List parameters and name &amp; address of contract lab(s): <b>NA - Analyses are performed in on-site VELAP accredited laboratory Lab ID 460012</b></p>	<p><input type="checkbox"/> Yes   <input type="checkbox"/> No</p>
<p>7. Are annual thermometer calibration(s) adequate?</p>	<p><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No</p>
<p>8. Parameters evaluated during this inspection (attach checklists):</p> <p><input checked="" type="checkbox"/> pH</p> <p><input type="checkbox"/> Temperature</p> <p><input type="checkbox"/> Total Residual Chlorine</p> <p><input checked="" type="checkbox"/> Dissolved Oxygen</p> <p><input type="checkbox"/> Biochemical Oxygen Demand</p> <p><input type="checkbox"/> Total Suspended Solids</p> <p><input type="checkbox"/> Other (specify) _____</p> <p><input type="checkbox"/> Other (specify) _____</p> <p><input type="checkbox"/> Other (specify) _____</p> <p><u>Comments:</u></p>	

**EFFLUENT FIELD DATA:**

Flow	<input type="text"/> MGD	Dissolved Oxygen	<input type="text" value="7.9"/> mg/L	TRC (Contact Tank)	<input type="text"/> mg/L
pH	<input type="text" value="7.08"/> S.U.	Temperature	<input type="text"/> °C	TRC (Final Effluent)	<input type="text"/> mg/L
<b>Was a Sampling Inspection conducted?</b> <input type="checkbox"/> Yes (see Sampling Inspection Report) <input type="checkbox"/> No					

**CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:**

1. Type of outfall:	<input checked="" type="checkbox"/> Shore based	<input type="checkbox"/> Submerged	Diffuser?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Are the outfall and supporting structures in good condition?				<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
3. Final Effluent (evidence of following problems):	<input type="checkbox"/> Turbid effluent	<input type="checkbox"/> Visible foam	<input type="checkbox"/> Sludge bar	<input type="checkbox"/> Unusual color	<input type="checkbox"/> Grease <input type="checkbox"/> Oil sheen
4. Is there a visible effluent plume in the receiving stream?				<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5. Receiving stream:	<input checked="" type="checkbox"/> No observed problems		<input type="checkbox"/> Indication of problems (explain below)		
Comments:					

**REQUEST for CORRETIVE ACTION:**

1. None at this time.
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**NOTES and COMMENTS:**

<ul style="list-style-type: none"> <li>See Inspection Summary at front of report.</li> </ul>
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ANALYST:	Mike Lawson	VPDES NO	VA0025101
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**Parameter: Hydrogen Ion (pH)**  
**Method: Electrometric**  
**01/08**

Meter: **Accumet AB15**

**METHOD OF ANALYSIS**

<b>X</b>	18 <sup>th</sup> Edition of Standard Methods-4500-H-B
	21 <sup>st</sup> or On-Line Edition of Standard Methods-4500-H-B (00)

**pH is a method defined analyte so modifications are not allowed. [40 CFR Part 136.6]**

	Y	N
1) Is a certificate of operator competence or initial demonstration of capability available for <u>each analyst/operator</u> performing the analysis? <b>NOTE:</b> Analyze 4 samples of known pH. May use external source of buffer (different lot/manufacturer than buffers used to calibrate meter). Recovery for each of the 4 samples must be $\pm 0.1$ SU of the known concentration of the sample. [SM 1020 B.1]	X	
2) Is the electrode in good condition (no chloride precipitate, etc.)? [2.b/c and 5.b]	X	
3) Is electrode storage solution in accordance with manufacturer's instructions? [Mfr.]	X	
4) Is meter calibrated on at least a daily basis using three buffers all of which are at the same temperature? [4.a] NOTE: Follow manufacturer's instructions.	X	
5) After calibration, is a buffer analyzed as a check sample to verify that calibration is correct? Agreement should be within $\pm 0.1$ SU. [4.a]	X	
6) Do the buffer solutions appear to be free of contamination or growths? [3.1]	X	
7) Are buffer solutions within their listed shelf life or have they been prepared within the last 4 weeks? [3.a]	X	
8) Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.]	X	
9) For meters with ATC that also have temperature display, was the thermometer calibrated annually? [SM2550 B.1]	X	
10) Is the temperature of buffer solutions and samples recorded when determining pH? [4.a]	X	
11) Is sample analyzed within 15 minutes of collection? [40 CFR 136.6]	X	
12) Was the electrode rinsed and then blotted dry between reading solutions (Disregard if a portion of the next sample analyzed is used as the rinse solution)? [4.a]	X	
13) Is the sample stirred gently at a constant speed during measurement? [4.b]	X	
14) Does the meter hold a steady reading after reaching equilibrium? [4.b]	X	
15) <del>Is a duplicate sample analyzed after every 20 samples if citing 18<sup>th</sup> or 19<sup>th</sup> Edition [1020 B.6] or after every 10 samples for 20<sup>th</sup> or 21<sup>st</sup> Edition [Part 1020] Note: Not required for <i>in situ</i> samples.</del>		
16) <del>Is pH of duplicate samples within 0.1 SU of the original sample? [Part 1020]</del>		
17) <del>Is there a written procedure for which result will be reported on DMR (Sample or Duplicate) and is this procedure followed? [DEQ]</del>		
	NA	

COMMENTS:	<b>4, 5) Calibrated with 4 and 7 buffer, checked with a 10 buffer</b>  <b>11) Because pH changes as temperature changes, the operator's log sheet should be modified to include the temperature of the sample at the time the pH is read.</b>
PROBLEMS:	<b>None noted.</b>

ANALYST:	Mike Lawson	VPDES NO.	VA0025101
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**Parameter: Dissolved Oxygen**  
**Method: Electrode**  
**01/08**

Meter: **YSI 58**

**METHOD OF ANALYSIS:**

<b>X</b>	18 <sup>th</sup> Edition of Standard Methods-4500-O G		
	21 <sup>st</sup> or Online Editions of Standard Methods-4500-O G (01)		
<b>DO is a method defined analyte so modifications are not allowed. [40 CFR Part 136.6]</b>		<b>Y</b>	<b>N</b>
1)	If samples are collected, is collection carried out with a minimum of turbulence and air bubble formation and is the sample bottle allowed to overflow several times its volume? [B.3]	<b>In situ</b>	
2)	Are meter and electrode operable and providing consistent readings? [3]	<b>X</b>	
3)	Is membrane in good condition without trapped air bubbles? [3.b]	<b>X</b>	
4)	Is correct filling solution used in electrode? [Mfr.]	<b>X</b>	
5)	Are water droplets shaken off the membrane prior to calibration? [Mfr.]	<b>X</b>	
6)	Is meter calibrated before use or at least daily? [Mfr.]	<b>X</b>	
7)	Is calibration procedure performed according to manufacturer's instructions? [Mfr.]	<b>X</b>	
8)	Is sample stirred during analysis? [Mfr.]	<b>In situ</b>	
9)	Is the sample analysis procedure performed according to manufacturer's instructions? [Mfr.]	<b>X</b>	
10)	Is meter stabilized before reading D.O.? [Mfr.]	<b>X</b>	
11)	Is electrode stored according to manufacturer's instructions? [Mfr.]	<b>X</b>	
12)	<del>Is a duplicate sample analyzed after every 20 samples if citing 18<sup>th</sup> or 19<sup>th</sup> Edition [1020 B.6] or after every 10 samples for 20<sup>th</sup> or 21<sup>st</sup> Edition [Part 1020] Note: Not required for <i>in situ</i> samples.</del>	<b>NA</b>	
13)	<del>If a duplicate sample is analyzed, is the reported value for that sampling event, the average concentration of the sample and the duplicate? [DEQ]</del>		
14)	<del>If a duplicate sample is analyzed, is the relative percent difference (RPD) &lt; 20? [18<sup>th</sup> ed. Table 1020 I; 21<sup>st</sup> ed. DEQ]</del>		

PROBLEMS:	<b>None Noted</b>
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**DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION  
EQUIPMENT TEMPERATURE LOG/THERMOMETER VERIFICATION CHECK SHEET**

1/08

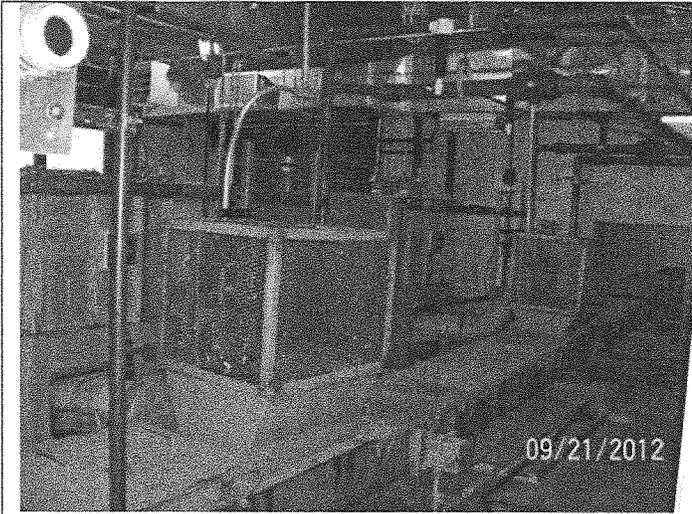
FACILITY NAME: <b>H.L. Mooney WRF</b>		VPDES NO: <b>VA0025101</b>	DATE: <b>September 21, 2012</b>						
EQUIPMENT	RANGE	IN RANGE	INSPECT READING °C	CHECK & LOG DAILY	CORRECT INCREMENT		ANNUAL THERMOMETER VERIFICATION		
					Y	N		Is the NIST / NIST-Traceable Reference Thermometer within the manufacturer's expiration date or recertified yearly?	Y/N
AUTO SAMPLER	1-6° C	Y	3.1	Y	Y	N	DATE CHECKED	MET?	CHECKED?
pH METER	± 1° C		Not noted				8-7-12	X	3.0
DO METER	± 1° C		Not noted				8-7-12	X	29.7
							8-7-12	X	+0.3

PROBLEMS: **None noted**

**DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION  
SAMPLE ANALYSIS HOLDING TIME/CONTAINER/PRESERVATION CHECK SHEET**

Revised 7/05 [40 CFR, Part 136.3, Table II]

FACILITY NAME: <b>H.L. Mooney RWF</b>		VPDES NO	DATE: <b>September 20, 2012</b>					
PARAMETER	HOLDING TIMES	APPROVED	LOGGED?	MET?	SAMPLE CONTAINER		PRESERVATION	
					APPROVED	LOGGED?	APPROVED	MET?
					Y	N	Y	N
pH	15 MIN.	X	X	X			N/A	
DISSOLVED O <sub>2</sub>	15 MIN./IN SITU	X	X	X			N/A	
PROBLEMS: <b>None noted</b>								
PROBLEMS: <b>N/A</b>								



1) Mechanical band screens and screenings conveyor.



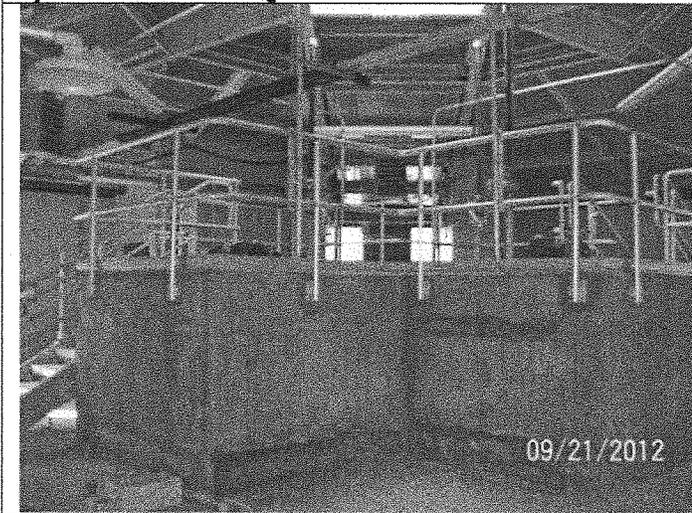
2) EQ basin #1.



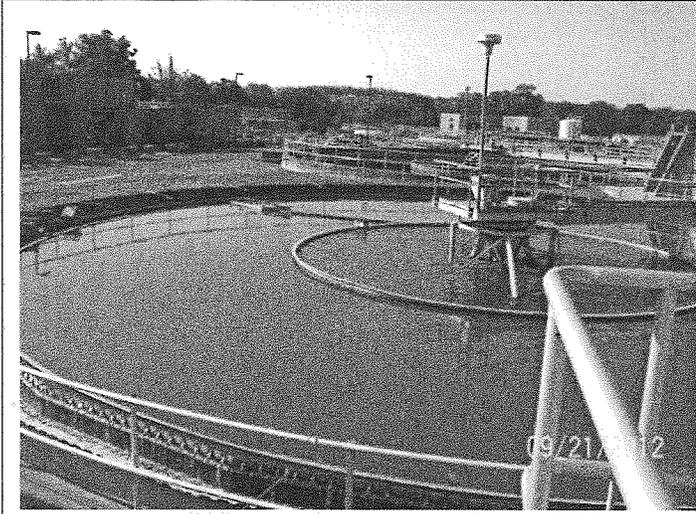
3) Drained down EQ basin #3.



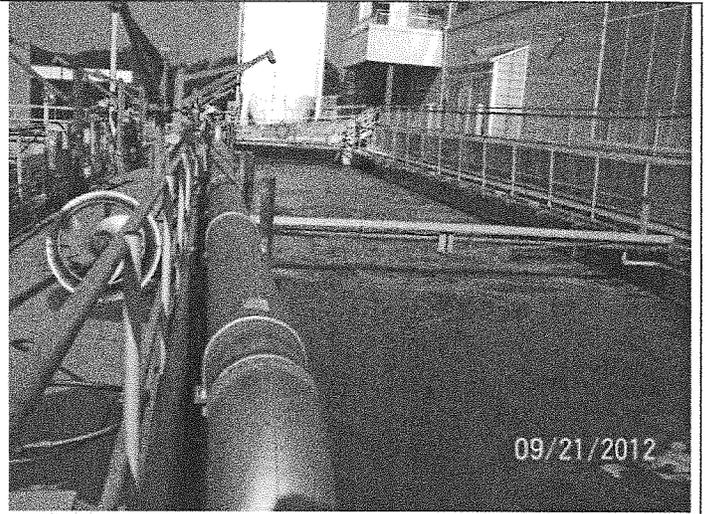
4) Flow measurement at influent metering station.



5) Built up splitter box for primary clarifiers 1-4.



**6) Primary clarifier.**



**7) BNR basin.**



**8) Empty BNR basin #2 showing zone dividers.**



**9) Secondary clarifier.**



**10) Secondary clarifier weirs.**



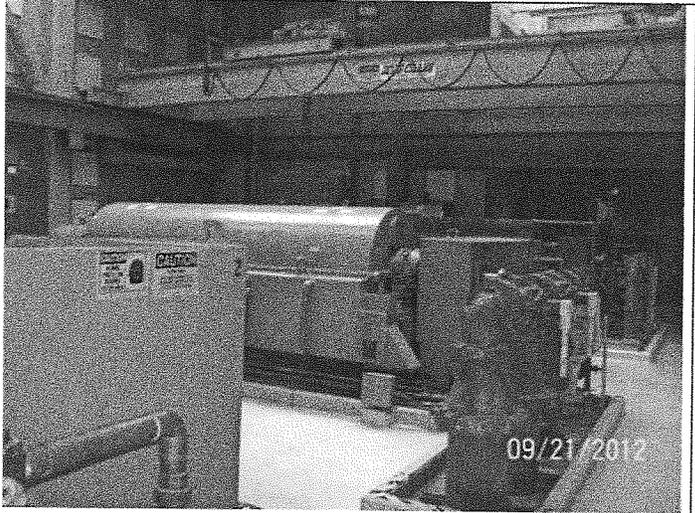
**11) Denitrification filters.**



**12) Step aeration.**



**13) Covered gravity thickeners and odor control.**



**14) Dewatering centrifuges.**

**Facility name: H. L. Mooney WRF**  
**Site Inspection Date: September 21, 2012**

**VPDES Permit No. VA0025101**  
**Photos & Layout by: S. Allen**

To: Alison Thompson  
From: Jennifer Carlson

Date: March 14, 2014  
Subject: Planning Statement for HL Mooney Advanced Water Reclamation Facility  
Permit Number: VA0025101

**Information for Outfall 001:**

Discharge Type: Municipal  
Discharge Flow: 24 MGD  
Receiving Stream: Neabsco Creek  
Latitude / Longitude: 38° 36' 39", 77° 16' 13"  
Rivermile: 1.57  
Streamcode: 1aNEA  
Waterbody: VAN-A25E  
Water Quality Standards: Class II, Section 6, Special Standards b, y  
Drainage Area: Not Applicable - tidal

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

This facility discharges into a segment of tidal Neabsco Creek that is not currently monitored by DEQ, but is listed with a water quality impairment. The following is the water quality summary for the receiving stream segment of tidal Neabsco Creek, as taken from the 2012 Integrated Report:

*The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. A PCB TMDL for the tidal Potomac River watershed has been completed and approved.*

*The aquatic life use is fully supporting. A TMDL has been completed for the Chesapeake Bay watershed. This downstream TMDL completed by EPA addresses the poor water quality in the Chesapeake Bay, and takes into account the entire Bay watershed including upstream tidal tributaries such as Neabsco Creek. The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life subuse; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed.*

*The recreation and wildlife uses were not assessed.*

There is a downstream DEQ ambient monitoring station, 1aNEA000.57, located in Neabsco Bay at the railroad bridge, approximately 1 mile downstream of Outfall 001. The following is the water quality summary for Neabsco Bay, as taken from the 2012 Integrated Report:

*Class II, Section 6, special stds. b, y.*

*DEQ monitoring stations located in Neabsco Bay:*

- Ambient water quality monitoring station 1aNEA000.40, near Marker 3/4
- Fish tissue, water quality, and continuous monitoring station 1aNEA000.57, at railroad bridge

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory and sufficient excursions above the fish tissue value (TV) for PCBs in fish tissue. Additionally, an excursion above the fish tissue value (TV) of 300 parts per billion (ppb) for mercury (Hg) in fish tissue was recorded in one species of fish (1 total samples) collected in 2008 at monitoring station 1aNEA000.57 (bluegill sunfish) is noted by an observed effect. A PCB TMDL for the tidal Potomac River watershed has been completed and approved.

*E. coli* monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use.

The aquatic life use is fully supporting. A TMDL has been completed for the Chesapeake Bay watershed. This downstream TMDL completed by EPA addresses the poor water quality in the Chesapeake Bay, and takes into account the entire Bay watershed including upstream tidal tributaries such as Neabsco Creek. The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life subuse; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed.

The wildlife use is considered fully supporting.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

Yes.

**Table A. 303(d) Impairment and TMDL information for the receiving stream segment**

Waterbody Name	Impaired Use	Cause	TMDL completed	WLA	Basis for WLA	TMDL Schedule
<b>Impairment Information in the 2012 Integrated Report</b>						
Neabsco Creek	Fish Consumption	PCBs	Tidal Potomac River PCB 10/31/2007	2.12 grams/year PCB	0.064 ng/L PCB --- 24 MGD	N/A

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Yes.

**Table B. Information on Downstream 303(d) Impairments and TMDLs**

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
<b>Impairment Information in the 2012 Integrated Report</b>							
Neabsco Bay	Recreation	<i>E. coli</i>	0.25 miles	No	---	---	2016
Chesapeake Bay	Aquatic Life	Total Nitrogen	---	Chesapeake Bay TMDL 12/29/2010	219,280 lbs/yr TN	Edge of Stream (EOS) Loads	N/A
		Total Phosphorus			13,157 lbs/yr TP		
		Total Suspended Solids			2,192,803.2 lbs/yr TSS		

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

The tidal Potomac River is listed with a PCB impairment and a TMDL has been developed to address this impairment. This facility has been included in the Tidal Potomac River PCB TMDL and has received a WLA. This facility conducted PCB monitoring during the last permit cycle in support of the PCB TMDL. The PCB monitoring data will be evaluated, and source reductions through pollution minimization plans may be needed.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes located within 5 miles of this discharge.

Dissolved Oxygen Criteria (9 VAC 25-260-185)

Designated Use	Criteria Concentration/Duration	Temporal Application
Migratory fish spawning and nursery	7-day mean > 6 mg/L (tidal habitats with 0-0.5 ppt salinity)	February 1 – May 31
	Instantaneous minimum > 5 mg/L	
Open-water <sup>1,2</sup>	30-day mean > 5.5 mg/L (tidal habitats with 0-0.5 ppt salinity)	Year-round
	30-day mean > 5 mg/L (tidal habitats with >0.5 ppt salinity)	
	7-day mean > 4 mg/L	
	Instantaneous minimum > 3.2 mg/L at temperatures < 29°C	
Deep-water	Instantaneous minimum > 4.3 mg/L at temperatures > 29°C	June 1-September 30
	30-day mean > 3 mg/L	
	1-day mean > 2.3 mg/L	
Deep-channel	Instantaneous minimum > 1.7 mg/L	June 1-September 30
	Instantaneous minimum > 1 mg/L	

<sup>1</sup>See subsection aa of 9 VAC 25-260-310 for site specific seasonal open-water dissolved oxygen criteria applicable to the tidal Mattaponi and Pamunkey Rivers and their tidal tributaries.

<sup>2</sup>In applying this open-water instantaneous criterion to the Chesapeake Bay and its tidal tributaries where the existing water quality for dissolved oxygen exceeds an instantaneous minimum of 3.2 mg/L, that higher water quality for dissolved oxygen shall be provided antidegradation protection in accordance with section 30 subsection A.2 of the Water Quality Standards.

# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: HL Mooney WRF      Permit No.: VA0025101  
 Receiving Stream: Neabsco Creek (November-January)      Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Flows		Mixing Information		Effluent Information	
1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	121 mg/L
7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	deg C
30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	11.6 deg C
1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	8 SU
30Q10 (Wet season) =	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
30Q5 =	0 MGD			Discharge Flow =	24 MGD
Harmonic Mean =	0 MGD				

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	
Acenaphthene	0	--	--	na	--	na	9.9E+02	--	--	--	--	--	--	--	na	9.9E+0	
Acrolein	0	--	--	na	--	na	9.3E+00	--	--	--	--	--	--	--	na	9.3E+0	
Acrylonitrile <sup>c</sup>	0	--	--	na	--	na	2.9E+00	--	--	--	--	--	--	--	na	2.9E+0	
Aldrin <sup>c</sup>	0	3.0E+00	--	na	3.0E+00	na	5.0E-04	--	--	--	--	--	--	--	na	5.0E-0	
Ammonia-N (mg/l) (Yearly)	0	8.41E+00	3.95E+00	na	8.41E+00	3.95E+00	--	--	--	--	--	--	--	3.95E+00	na	8.41E+00	
Ammonia-N (mg/l) (High Flow)	0	8.41E+00	2.94E+00	na	8.41E+00	2.94E+00	--	--	--	--	--	--	--	2.94E+00	na	8.41E+00	
Anthracene	0	--	--	na	--	na	4.0E+04	--	--	--	--	--	--	--	na	4.0E+0	
Antimony	0	3.4E+02	1.5E+02	na	3.4E+02	1.5E+02	--	--	--	--	--	--	--	1.5E+02	na	3.4E+02	
Arsenic	0	--	--	na	--	na	5.1E+02	--	--	--	--	--	--	--	na	5.1E+0	
Barium	0	--	--	na	--	na	2.0E-03	--	--	--	--	--	--	--	na	2.0E-03	
Benzene <sup>c</sup>	0	--	--	na	--	na	1.8E-01	--	--	--	--	--	--	--	na	1.8E-01	
Benzidine <sup>c</sup>	0	--	--	na	--	na	1.8E-01	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (a) anthracene <sup>c</sup>	0	--	--	na	--	na	1.8E-01	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (b) fluoranthene <sup>c</sup>	0	--	--	na	--	na	1.8E-01	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (k) fluoranthene <sup>c</sup>	0	--	--	na	--	na	1.8E-01	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (a) pyrene <sup>c</sup>	0	--	--	na	--	na	1.8E-01	--	--	--	--	--	--	--	na	1.8E-01	
Bis(2-Chloroethyl) Ether <sup>c</sup>	0	4.9E+00	1.3E+00	na	4.9E+00	1.3E+00	--	--	--	--	--	--	--	1.3E+00	na	4.9E+00	
Bis(2-Chloroisopropyl) Ether	0	--	--	na	--	na	1.6E+01	--	--	--	--	--	--	--	na	1.6E+01	
Bis(2-Ethylhexyl) Phthalate <sup>c</sup>	0	2.4E+00	4.3E-03	na	2.4E+00	4.3E-03	8.1E-03	--	--	--	--	--	--	4.3E-03	na	2.4E+00	
Bromofom <sup>c</sup>	0	8.6E+05	2.3E+05	na	8.6E+05	2.3E+05	--	--	--	--	--	--	--	2.3E+05	na	8.6E+05	
Butylbenzylphthalate	0	1.9E+01	1.1E+01	na	1.9E+01	1.1E+01	--	--	--	--	--	--	--	1.1E+01	na	1.9E+01	
Cadmium	0	--	--	na	--	na	1.6E+01	--	--	--	--	--	--	--	na	1.6E+01	
Carbon Tetrachloride <sup>c</sup>	0	2.4E+00	4.3E-03	na	2.4E+00	4.3E-03	8.1E-03	--	--	--	--	--	--	4.3E-03	na	2.4E+00	
Chlordane <sup>c</sup>	0	8.6E+05	2.3E+05	na	8.6E+05	2.3E+05	--	--	--	--	--	--	--	2.3E+05	na	8.6E+05	
Chloride	0	1.9E+01	1.1E+01	na	1.9E+01	1.1E+01	--	--	--	--	--	--	--	1.1E+01	na	1.9E+01	
TRC	0	--	--	na	--	na	1.6E+03	--	--	--	--	--	--	--	na	1.6E+03	
Chlorobenzene																	1.6E+03

WILAS  
 $8.41 \times 3.76 = 31.62$   
 $2.94 \times 3.76 = 11.05$



Parameter (ug/l, unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Ethylbenzene	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	2.1E+0
Fluoranthene	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.4E+0
Fluorene	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	5.3E+0
Foaming Agents	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	1.0E-02	na	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor <sup>c</sup>	0	5.2E-01	3.8E-03	na	5.2E-01	3.8E-03	na	7.9E-04	7.9E-04	--	--	--	5.2E-01	3.8E-03	na	7.9E-0
Heptachlor Epoxide <sup>c</sup>	0	5.2E-01	3.8E-03	na	5.2E-01	3.8E-03	na	3.9E-04	3.9E-04	--	--	--	5.2E-01	3.8E-03	na	3.9E-0
Hexachlorobenzene <sup>c</sup>	0	--	--	na	--	--	na	2.9E-03	2.9E-03	--	--	--	--	--	na	2.9E-0
Hexachlorobutadiene <sup>c</sup>	0	--	--	na	--	--	na	1.8E+02	1.8E+02	--	--	--	--	--	na	1.8E+0
Hexachlorocyclohexane	0	--	--	na	--	--	na	4.9E-02	4.9E-02	--	--	--	--	--	na	4.9E-0
Hexachlorocyclohexane Beta-BHC <sup>c</sup>	0	--	--	na	--	--	na	1.7E-01	1.7E-01	--	--	--	--	--	na	1.7E-0
Hexachlorocyclohexane Gamma-BHC <sup>c</sup> (Lindane)	0	9.5E-01	na	na	9.5E-01	--	na	1.8E+00	1.8E+00	--	--	--	9.5E-01	--	na	1.8E+0
Hexachlorocyclopentadiene	0	--	--	na	--	--	na	1.1E+03	1.1E+03	--	--	--	--	--	na	1.1E+0
Hexachloroethane <sup>c</sup>	0	--	--	na	--	--	na	3.3E+01	3.3E+01	--	--	--	--	--	na	3.3E+0
Hydrogen Sulfide	0	--	2.0E+00	na	--	2.0E+00	na	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene <sup>c</sup>	0	--	--	na	--	--	na	1.8E-01	1.8E-01	--	--	--	--	--	na	1.8E-0
Iron	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	--
Isophorone <sup>c</sup>	0	--	--	na	--	--	na	9.6E+03	9.6E+03	--	--	--	--	--	na	9.6E+0
Kepone	0	--	0.0E+00	na	--	0.0E+00	na	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	1.5E+02	1.7E+01	na	1.5E+02	1.7E+01	na	--	--	--	--	--	1.5E+02	1.7E+01	na	--
Malathion	0	--	1.0E-01	na	--	1.0E-01	na	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	1.4E+00	7.7E-01	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	--	--	na	1.5E+03	1.5E+03	--	--	--	--	--	na	1.5E+0
Methylene Chloride <sup>c</sup>	0	--	--	na	--	--	na	5.9E+03	5.9E+03	--	--	--	--	--	na	5.9E+0
Methoxychlor	0	--	3.0E-02	na	--	3.0E-02	na	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	0.0E+00	na	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	2.1E+02	2.4E+01	na	2.1E+02	2.4E+01	na	4.6E+03	4.6E+03	--	--	--	2.1E+02	2.4E+01	na	4.6E+0
Nitrate (as N)	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	--	--	na	6.9E+02	6.9E+02	--	--	--	--	--	na	6.9E+0
N-Nitrosodimethylamine <sup>c</sup>	0	--	--	na	--	--	na	3.0E+01	3.0E+01	--	--	--	--	--	na	3.0E+0
N-Nitrosodiphenylamine <sup>c</sup>	0	--	--	na	--	--	na	6.0E+01	6.0E+01	--	--	--	--	--	na	6.0E+0
N-Nitrosodi-n-propylamine <sup>c</sup>	0	--	--	na	--	--	na	5.1E+00	5.1E+00	--	--	--	--	--	na	5.1E+0
Nonylphenol	0	2.8E+01	6.6E+00	--	2.8E+01	6.6E+00	na	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	6.5E-02	1.3E-02	na	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total <sup>c</sup>	0	--	1.4E-02	na	--	1.4E-02	na	6.4E-04	6.4E-04	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol <sup>c</sup>	0	7.7E-03	5.9E-03	na	7.7E-03	5.9E-03	na	3.0E+01	3.0E+01	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	--	--	na	8.6E+05	8.6E+05	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	--	--	na	4.0E+03	4.0E+03	--	--	--	--	--	na	4.0E+03
Radionuclides Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria						Wasteload Allocations						Antidegradation Baseline						Antidegradation Allocations						Most Limiting Allocations								
		Acute		Chronic		HH (PWS)		Acute		Chronic		HH (PWS)		Acute		Chronic		HH (PWS)		Acute		Chronic		HH (PWS)		Acute		Chronic		HH (PWS)		HH		
		2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	
Selenium, Total Recoverable	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03		
Silver	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03	
Sulfate	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
1,1,2,2-Tetrachloroethane <sup>c</sup>	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
Tetrachloroethylene <sup>c</sup>	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
Thallium	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
Toluene	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
Total dissolved solids	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
Toxaphene <sup>c</sup>	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
Tributyltin	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
1,2,4-Trichlorobenzene	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
1,1,2-Trichloroethane <sup>c</sup>	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
Trichloroethylene <sup>c</sup>	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
2,4,6-Trichlorophenol <sup>c</sup>	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
Vinyl Chloride <sup>c</sup>	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03
Zinc	0	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	2.0E+01	4.8E+00	5.0E+00	na	4.2E+03	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4.2E+03

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	7.9E-01
Chromium III	5.2E+01
Chromium VI	6.4E+00
Copper	6.3E+00
Iron	na
Lead	1.0E+01
Manganese	na
Mercury	4.6E-01
Nickel	1.4E+01
Selenium	3.0E+00
Silver	1.9E+00
Zinc	5.5E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 20 maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic  
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: HL Mooney WRF Permit No.: VA0025101  
 Receiving Stream: Neabscoc Creek (February - March) Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information	Stream Flows	Mixing Information	Effluent Information
Mean Hardness (as CaCO3) =	105.9 mg/L	Annual - 1Q10 Mix =	Mean Hardness (as CaCO3) =
90% Temperature (Annual) =	deg C	7Q10 (Annual) =	90% Temp (Annual) =
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	90% Temp (Wet season) =
90% Maximum pH =	SU	1Q10 (Wet season) =	90% Maximum pH =
10% Maximum pH =	SU	30Q10 (Wet season) =	10% Maximum pH =
Tier Designation (1 or 2) =	1	30Q5 =	Discharge Flow =
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	
Trout Present Y/N? =	n		
Early Life Stages Present Y/N? =	y		

Parameter (ug/l unless noted)	Background			Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
Acenaphthene	0	--	--	na	9.9E+02	--	na	9.9E+02	--	--	--	--	--	--	--	na	9.9E+0	
Acrolein	0	--	--	na	9.3E+00	--	na	9.3E+00	--	--	--	--	--	--	--	na	9.3E+0	
Acrylonitrile <sup>c</sup>	0	--	--	na	2.5E+00	--	na	2.5E+00	--	--	--	--	--	--	--	na	2.5E+0	
Aldrin <sup>c</sup>	0	3.0E+00	--	na	5.0E-04	3.0E+00	na	5.0E-04	--	--	--	--	--	3.0E+00	--	na	5.0E-0	
Ammonia-N (mg/l)	0	3.74E+00	1.25E+00	na	--	3.74E+00	1.25E+00	na	--	--	--	--	--	3.74E+00	1.25E+00	na	--	
Ammonia-N (mg/l) (High Flow)	0	3.74E+00	1.25E+00	na	--	3.74E+00	1.25E+00	na	--	--	--	--	--	3.74E+00	1.25E+00	na	--	
Anthracene	0	--	--	na	4.0E+04	--	na	4.0E+04	--	--	--	--	--	--	--	na	4.0E+0	
Antimony	0	--	--	na	6.4E+02	3.4E+02	na	6.4E+02	--	--	--	--	--	3.4E+02	1.5E+02	na	6.4E+0	
Arsenic	0	--	--	na	--	--	na	--	--	--	--	--	--	--	--	na	--	
Barium	0	--	--	na	--	--	na	--	--	--	--	--	--	--	--	na	--	
Benzene <sup>c</sup>	0	--	--	na	5.1E+02	--	na	5.1E+02	--	--	--	--	--	--	--	na	5.1E+0	
Benzidine <sup>c</sup>	0	--	--	na	2.0E-03	--	na	2.0E-03	--	--	--	--	--	--	--	na	2.0E-03	
Benzo (a) anthracene <sup>c</sup>	0	--	--	na	1.8E-01	--	na	1.8E-01	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (b) fluoranthene <sup>c</sup>	0	--	--	na	1.8E-01	--	na	1.8E-01	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (k) fluoranthene <sup>c</sup>	0	--	--	na	1.8E-01	--	na	1.8E-01	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (a) pyrene <sup>c</sup>	0	--	--	na	1.8E-01	--	na	1.8E-01	--	--	--	--	--	--	--	na	1.8E-01	
Bis(2-Chloroethyl) Ether <sup>c</sup>	0	--	--	na	5.3E+00	--	na	5.3E+00	--	--	--	--	--	--	--	na	5.3E+00	
Bis(2-Chloroisopropyl) Ether	0	--	--	na	6.5E+04	--	na	6.5E+04	--	--	--	--	--	--	--	na	6.5E+04	
Bis 2-Ethylhexyl Phthalate <sup>c</sup>	0	--	--	na	2.2E+01	--	na	2.2E+01	--	--	--	--	--	--	--	na	2.2E+01	
Bromoform <sup>c</sup>	0	--	--	na	1.4E+03	--	na	1.4E+03	--	--	--	--	--	--	--	na	1.4E+03	
Butylbenzylphthalate	0	4.9E+00	1.3E+00	na	1.9E+03	4.9E+00	na	1.9E+03	--	--	--	--	--	4.9E+00	1.3E+00	na	1.9E+03	
Cadmium	0	--	--	na	1.6E+01	--	na	1.6E+01	--	--	--	--	--	--	--	na	1.6E+01	
Carbon Tetrachloride <sup>c</sup>	0	--	--	na	8.1E-03	2.4E+00	na	8.1E-03	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03	
Chlordane <sup>c</sup>	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	na	8.1E-03	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03	
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	na	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--	
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	na	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--	
Chlorobenzene	0	--	--	na	1.6E+03	--	na	1.6E+03	--	--	--	--	--	--	--	na	1.6E+03	

WLAS

3.74 x 3.61 = 13.5

1.25 x 3.61 = 4.51

Parameter (ug/l unless noted)	Background		Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
Chlorodibromomethane <sup>c</sup>	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+0	
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+0	
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+0	
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+0	
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	
Chromium III	0	6.7E+02	8.7E+01	na	--	6.7E+02	8.7E+01	na	--	6.7E+02	8.7E+01	na	--	6.7E+02	8.7E+01	na	--	6.7E+02	8.7E+01	na	--	
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	
Chromium, Total	0	--	--	1.0E+02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	na	--	
Chrysene <sup>c</sup>	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-0	
Copper	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+0	
DDD <sup>c</sup>	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-0	
DDE <sup>c</sup>	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-0	
DDT <sup>c</sup>	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-0	
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	1.0E-01	na	--	--	1.0E-01	na	--	--	1.0E-01	na	--	
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	
Dibenz(a,h)anthracene <sup>c</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-0	
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+0	
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+0	
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+0	
3,3-Dichlorobenzidine <sup>c</sup>	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-0	
Dichlorobromomethane <sup>c</sup>	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+0	
1,2-Dichloroethane <sup>c</sup>	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+0	
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+0	
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+0	
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+0	
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--	
1,2-Dichloropropane <sup>c</sup>	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+0	
1,3-Dichloropropene <sup>c</sup>	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+0	
Dieldrin <sup>c</sup>	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-0	
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+0	
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+0	
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+0	
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+0	
2,4-Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+0	
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+0	
2,4-Dinitrotoluene <sup>c</sup>	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+0	
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-0	
1,2-Diphenylhydrazine <sup>c</sup>	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+0	
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+0	
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+0	
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+0	
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-0	
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-0	

Parameter (ug/l unless noted)	Background		Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
																						HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	na	1.4E+02	
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	na	5.3E+03	
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	1.0E-02	na	--	--	1.0E-02	na	--	--	1.0E-02	na	--	
Heptachlor <sup>c</sup>	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	
Heptachlor Epoxide <sup>c</sup>	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	
Hexachlorobenzene <sup>c</sup>	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	na	2.9E-03	
Hexachlorobutadiene <sup>c</sup>	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	na	1.8E+02	
Hexachlorocyclohexane	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	na	4.9E-02	
Hexachlorocyclohexane Beta-BHC <sup>c</sup>	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	
Hexachlorocyclohexane Gamma-BHC <sup>c</sup> (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	na	na	1.8E+00	9.5E-01	na	na	1.8E+00	9.5E-01	na	na	1.8E+00	9.5E-01	na	na	1.8E+00	
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	na	1.1E+03	
Hexachloroethane <sup>c</sup>	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+01	
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	2.0E+00	na	--	--	2.0E+00	na	--	--	2.0E+00	na	--	
Indeno (1,2,3-cd) pyrene <sup>c</sup>	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-01	
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	
Isophorone <sup>c</sup>	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	na	9.6E+03	
Kepon	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	
Lead	0	1.5E+02	1.7E+01	na	--	1.5E+02	1.7E+01	na	--	1.5E+02	1.7E+01	na	--	1.5E+02	1.7E+01	na	--	1.5E+02	1.7E+01	na	--	
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	1.0E-01	na	--	--	1.0E-01	na	--	--	1.0E-01	na	--	
Manganese	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	na	1.5E+03	
Methylene Chloride <sup>c</sup>	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	na	5.9E+03	
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	3.0E-02	na	--	--	3.0E-02	na	--	--	3.0E-02	na	--	
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	
Nickel	0	2.1E+02	2.4E+01	na	4.6E+03	2.1E+02	2.4E+01	na	4.6E+03	2.1E+02	2.4E+01	na	4.6E+03	2.1E+02	2.4E+01	na	4.6E+03	2.1E+02	2.4E+01	na	4.6E+03	
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	na	6.9E+02	
N-Nitrosodimethylamine <sup>c</sup>	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	na	3.0E+01	
N-Nitrosodiphenylamine <sup>c</sup>	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	na	6.0E+01	
N-Nitrosodi-n-propylamine <sup>c</sup>	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	na	5.1E+00	
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	2.8E+01	6.6E+00	na	--	2.8E+01	6.6E+00	na	--	2.8E+01	6.6E+00	na	--	
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	
PCB Total <sup>c</sup>	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	
Pentachlorophenol <sup>c</sup>	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	na	8.6E+05	
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	na	4.0E+03	
Radionuclides Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	na	4.2E+03	--	--	--	--	2.0E+01	5.0E+00	na	4.2E+01	
Silver	0	4.8E+00	--	na	--	na	--	--	--	--	--	4.8E+00	--	na	--	
Sulfate	0	--	--	na	--	na	--	--	--	--	--	--	--	na	--	
1,1,2,2-Tetrachloroethane <sup>c</sup>	0	--	--	na	4.0E+01	na	4.0E+01	--	--	--	--	--	--	na	4.0E+01	
Tetrachloroethylene <sup>c</sup>	0	--	--	na	3.3E+01	na	3.3E+01	--	--	--	--	--	--	na	3.3E+01	
Thallium	0	--	--	na	4.7E-01	na	4.7E-01	--	--	--	--	--	--	na	4.7E-01	
Toluene	0	--	--	na	6.0E+03	na	6.0E+03	--	--	--	--	--	--	na	6.0E+03	
Total dissolved solids	0	--	--	na	--	na	--	--	--	--	--	--	--	na	--	
Toxaphene <sup>c</sup>	0	7.3E-01	2.0E-04	na	2.8E-03	na	2.8E-03	--	--	--	--	7.3E-01	2.0E-04	na	2.8E-03	
Tributyltin	0	4.6E-01	7.2E-02	na	--	na	--	--	--	--	--	4.6E-01	7.2E-02	na	--	
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	na	7.0E+01	--	--	--	--	--	--	na	7.0E+01	
1,1,2-Trichloroethane <sup>c</sup>	0	--	--	na	1.6E+02	na	1.6E+02	--	--	--	--	--	--	na	1.6E+02	
Trichloroethylene <sup>c</sup>	0	--	--	na	3.0E+02	na	3.0E+02	--	--	--	--	--	--	na	3.0E+02	
2,4,6-Trichlorophenol <sup>c</sup>	0	--	--	na	2.4E+01	na	2.4E+01	--	--	--	--	--	--	na	2.4E+01	
2-(2,4,5-Trichlorophenoxy)propionic acid (Sivex)	0	--	--	na	--	na	--	--	--	--	--	--	--	na	--	
Vinyl Chloride <sup>c</sup>	0	--	--	na	2.4E+01	na	2.4E+01	--	--	--	--	--	--	na	2.4E+01	
Zinc	0	1.4E+02	1.4E+02	na	2.6E+04	na	2.6E+04	1.4E+02	1.4E+02	na	2.6E+04	1.4E+02	1.4E+02	na	2.6E+04	

Notes: Note: do not use QL's lower than the minimum QL's provided in agency guidance

Meial	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	7.9E-01
Chromium III	5.2E+01
Chromium VI	6.4E+00
Copper	6.3E+00
Iron	na
Lead	1.0E+01
Manganese	na
Mercury	4.6E-01
Nickel	1.4E+01
Selenium	3.0E+00
Silver	1.9E+00
Zinc	5.5E+01

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.  
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic  
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: TQ10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: HL Mooney WRF Permit No.: VA0025101  
 Receiving Stream: Neabasco Creek (April-October) Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information	Stream Flows	Mixing Information	Effluent Information
Mean Hardness (as CaCO3) =	105.9 mg/L	Annual - 1Q10 Mix =	121 mg/L
90% Temperature (Annual) =	deg C	- 7Q10 Mix =	30.11 deg C
90% Temperature (Wet season) =	deg C	- 30Q10 Mix =	deg C
90% Maximum pH =	SU	Wet Season - 1Q10 Mix =	8.9 SU
10% Maximum pH =	SU	- 30Q10 Mix =	SU
Tier Designation (1 or 2) =	1		24 MGD
Public Water Supply (PWS) Y/N? =	n		
Trout Present Y/N? =	n		
Early Life Stages Present Y/N? =	y		

Parameter (ug/l unless noted)	Background		Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations				
	Conc.		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
Acenaphthene	0		--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02	--
Acrolein	0		--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00	--
Acrylonitrile <sup>c</sup>	0		--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00	--
Aldrin <sup>c</sup>	0		3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	--	--	na	5.0E-04	--
Ammonia-N (mg/l) (Yearly)	0		1.56E+00	2.07E-01	na	--	1.56E+00	2.07E-01	na	--	--	--	--	--	--	--	--	--	1.56E+00	2.07E-01	na	--	--
Ammonia-N (mg/l) (High Flow)	0		1.56E+00	5.65E-01	na	--	1.56E+00	5.65E-01	na	--	--	--	--	--	--	--	--	--	1.56E+00	5.65E-01	na	--	--
Anthracene	0		--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04	--
Antimony	0		--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02	--
Arsenic	0		3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--	--
Barium	0		--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--	--
Benzene <sup>c</sup>	0		--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02	--
Benzidine <sup>c</sup>	0		--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03	--
Benzo (a) anthracene <sup>c</sup>	0		--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	--
Benzo (b) fluoranthene <sup>c</sup>	0		--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	--
Benzo (k) fluoranthene <sup>c</sup>	0		--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	--
Benzo (a) pyrene <sup>c</sup>	0		--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	--
Bis(2-Chloroethyl) Ether <sup>c</sup>	0		--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00	--
Bis(2-Chloroisopropyl) Ether	0		--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04	--
Bis(2-Ethylhexyl) Phthalate <sup>c</sup>	0		--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01	--
Bromofom <sup>c</sup>	0		--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03	--
Butylbenzylphthalate	0		--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03	--
Cadmium	0		4.9E+00	1.3E+00	na	--	4.9E+00	1.3E+00	na	--	--	--	--	--	--	--	--	--	4.9E+00	1.3E+00	na	--	--
Carbon Tetrachloride <sup>c</sup>	0		--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01	--
Chlordane <sup>c</sup>	0		2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	--	--
Chloride	0		8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--	--
TRC	0		1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--	--
Chlorobenzene	0		--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03	--

WLAS  
 $1.56 \times 4.96 = 7.74$   
 $0.207 \times 4.96 = 1.03$

Parameter (ug/l unless noted)	Background		Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations							
	Conc.	HH	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
																										HH
Chlorobromomethane <sup>c</sup>	0	na	1.3E+02	na	1.3E+02	na	na	1.3E+02	na	na	1.3E+02	na	1.3E+02	na	na	1.3E+02	na	1.3E+02	na	na	1.3E+02	na	1.3E+02	na	1.3E+02	na
Chloroform	0	na	1.1E+04	na	1.1E+04	na	na	1.1E+04	na	na	1.1E+04	na	1.1E+04	na	na	1.1E+04	na	1.1E+04	na	na	1.1E+04	na	1.1E+04	na	1.1E+04	na
2-Chloronaphthalene	0	na	1.6E+03	na	1.6E+03	na	na	1.6E+03	na	na	1.6E+03	na	1.6E+03	na	na	1.6E+03	na	1.6E+03	na	na	1.6E+03	na	1.6E+03	na	1.6E+03	na
2-Chlorophenol	0	na	1.5E+02	na	1.5E+02	na	na	1.5E+02	na	na	1.5E+02	na	1.5E+02	na	na	1.5E+02	na	1.5E+02	na	na	1.5E+02	na	1.5E+02	na	1.5E+02	na
Chlorpyrifos	0	8.3E-02	4.1E-02	na	na	8.3E-02	4.1E-02	na	na	8.3E-02	4.1E-02	na	na	8.3E-02	4.1E-02	na	na	8.3E-02	4.1E-02	na	na	8.3E-02	4.1E-02	na	na	8.3E-02
Chromium III	0	6.7E+02	8.7E+01	na	na	6.7E+02	8.7E+01	na	na	6.7E+02	8.7E+01	na	na	6.7E+02	8.7E+01	na	na	6.7E+02	8.7E+01	na	na	6.7E+02	8.7E+01	na	na	6.7E+02
Chromium VI	0	1.6E+01	1.1E+01	na	na	1.6E+01	1.1E+01	na	na	1.6E+01	1.1E+01	na	na	1.6E+01	1.1E+01	na	na	1.6E+01	1.1E+01	na	na	1.6E+01	1.1E+01	na	na	1.6E+01
Chromium, Total	0	1.0E+02	1.0E+02	na	na	1.0E+02	1.0E+02	na	na	1.0E+02	1.0E+02	na	na	1.0E+02	1.0E+02	na	na	1.0E+02	1.0E+02	na	na	1.0E+02	1.0E+02	na	na	1.0E+02
Chrysenes <sup>c</sup>	0	na	1.8E-02	na	1.8E-02	na	na	1.8E-02	na	na	1.8E-02	na	1.8E-02	na	na	1.8E-02	na	1.8E-02	na	na	1.8E-02	na	1.8E-02	na	1.8E-02	na
Copper	0	1.6E+01	1.1E+01	na	na	1.6E+01	1.1E+01	na	na	1.6E+01	1.1E+01	na	na	1.6E+01	1.1E+01	na	na	1.6E+01	1.1E+01	na	na	1.6E+01	1.1E+01	na	na	1.6E+01
Cyanide, Free	0	2.2E+01	5.2E+00	na	na	2.2E+01	5.2E+00	na	na	2.2E+01	5.2E+00	na	na	2.2E+01	5.2E+00	na	na	2.2E+01	5.2E+00	na	na	2.2E+01	5.2E+00	na	na	2.2E+01
DDD <sup>c</sup>	0	na	3.1E-03	na	3.1E-03	na	na	3.1E-03	na	na	3.1E-03	na	3.1E-03	na	na	3.1E-03	na	3.1E-03	na	na	3.1E-03	na	3.1E-03	na	3.1E-03	na
DDE <sup>c</sup>	0	na	2.2E-03	na	2.2E-03	na	na	2.2E-03	na	na	2.2E-03	na	2.2E-03	na	na	2.2E-03	na	2.2E-03	na	na	2.2E-03	na	2.2E-03	na	2.2E-03	na
DDT <sup>c</sup>	0	1.1E+00	1.0E-03	na	na	1.1E+00	1.0E-03	na	na	1.1E+00	1.0E-03	na	na	1.1E+00	1.0E-03	na	na	1.1E+00	1.0E-03	na	na	1.1E+00	1.0E-03	na	na	1.1E+00
Demeton	0	na	1.0E-01	na	na	na	1.0E-01	na	na	1.0E-01	1.0E-01	na	na	1.0E-01	1.0E-01	na	na	1.0E-01	1.0E-01	na	na	1.0E-01	1.0E-01	na	na	1.0E-01
Diazinon	0	1.7E-01	1.7E-01	na	na	1.7E-01	1.7E-01	na	na	1.7E-01	1.7E-01	na	na	1.7E-01	1.7E-01	na	na	1.7E-01	1.7E-01	na	na	1.7E-01	1.7E-01	na	na	1.7E-01
Dibenz(a,h)anthracene <sup>c</sup>	0	na	1.8E-01	na	1.8E-01	na	na	1.8E-01	na	na	1.8E-01	na	1.8E-01	na	na	1.8E-01	na	1.8E-01	na	na	1.8E-01	na	1.8E-01	na	1.8E-01	na
1,2-Dichlorobenzene	0	na	1.3E+03	na	1.3E+03	na	na	1.3E+03	na	na	1.3E+03	na	1.3E+03	na	na	1.3E+03	na	1.3E+03	na	na	1.3E+03	na	1.3E+03	na	1.3E+03	na
1,3-Dichlorobenzene	0	na	9.6E+02	na	9.6E+02	na	na	9.6E+02	na	na	9.6E+02	na	9.6E+02	na	na	9.6E+02	na	9.6E+02	na	na	9.6E+02	na	9.6E+02	na	9.6E+02	na
1,4-Dichlorobenzene	0	na	1.9E+02	na	1.9E+02	na	na	1.9E+02	na	na	1.9E+02	na	1.9E+02	na	na	1.9E+02	na	1.9E+02	na	na	1.9E+02	na	1.9E+02	na	1.9E+02	na
3,3-Dichlorobenzidine <sup>c</sup>	0	na	2.8E-01	na	2.8E-01	na	na	2.8E-01	na	na	2.8E-01	na	2.8E-01	na	na	2.8E-01	na	2.8E-01	na	na	2.8E-01	na	2.8E-01	na	2.8E-01	na
Dichlorobromomethane <sup>c</sup>	0	na	1.7E+02	na	1.7E+02	na	na	1.7E+02	na	na	1.7E+02	na	1.7E+02	na	na	1.7E+02	na	1.7E+02	na	na	1.7E+02	na	1.7E+02	na	1.7E+02	na
1,2-Dichloroethane <sup>c</sup>	0	na	3.7E+02	na	3.7E+02	na	na	3.7E+02	na	na	3.7E+02	na	3.7E+02	na	na	3.7E+02	na	3.7E+02	na	na	3.7E+02	na	3.7E+02	na	3.7E+02	na
1,1-Dichloroethylene	0	na	7.1E+03	na	7.1E+03	na	na	7.1E+03	na	na	7.1E+03	na	7.1E+03	na	na	7.1E+03	na	7.1E+03	na	na	7.1E+03	na	7.1E+03	na	7.1E+03	na
1,2-trans-dichloroethylene	0	na	1.0E+04	na	1.0E+04	na	na	1.0E+04	na	na	1.0E+04	na	1.0E+04	na	na	1.0E+04	na	1.0E+04	na	na	1.0E+04	na	1.0E+04	na	1.0E+04	na
2,4-Dichlorophenol	0	na	2.9E+02	na	2.9E+02	na	na	2.9E+02	na	na	2.9E+02	na	2.9E+02	na	na	2.9E+02	na	2.9E+02	na	na	2.9E+02	na	2.9E+02	na	2.9E+02	na
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	na	1.5E+02	na	1.5E+02	na	na	1.5E+02	na	na	1.5E+02	na	1.5E+02	na	na	1.5E+02	na	1.5E+02	na	na	1.5E+02	na	1.5E+02	na	1.5E+02	na
1,2-Dichloropropane <sup>c</sup>	0	na	2.1E+02	na	2.1E+02	na	na	2.1E+02	na	na	2.1E+02	na	2.1E+02	na	na	2.1E+02	na	2.1E+02	na	na	2.1E+02	na	2.1E+02	na	2.1E+02	na
1,3-Dichloropropene <sup>c</sup>	0	na	5.4E-04	na	5.4E-04	na	na	5.4E-04	na	na	5.4E-04	na	5.4E-04	na	na	5.4E-04	na	5.4E-04	na	na	5.4E-04	na	5.4E-04	na	5.4E-04	na
Dieldrin <sup>c</sup>	0	2.4E-01	5.6E-02	na	5.6E-02	2.4E-01	5.6E-02	na	na	2.4E-01	5.6E-02	na	5.6E-02	na	na	2.4E-01	5.6E-02	na	5.6E-02	na	na	2.4E-01	5.6E-02	na	5.6E-02	na
Diethyl Phthalate	0	na	4.4E+04	na	4.4E+04	na	na	4.4E+04	na	na	4.4E+04	na	4.4E+04	na	na	4.4E+04	na	4.4E+04	na	na	4.4E+04	na	4.4E+04	na	4.4E+04	na
2,4-Dimethylphenol	0	na	8.5E+02	na	8.5E+02	na	na	8.5E+02	na	na	8.5E+02	na	8.5E+02	na	na	8.5E+02	na	8.5E+02	na	na	8.5E+02	na	8.5E+02	na	8.5E+02	na
Dimethyl Phthalate	0	na	1.1E+06	na	1.1E+06	na	na	1.1E+06	na	na	1.1E+06	na	1.1E+06	na	na	1.1E+06	na	1.1E+06	na	na	1.1E+06	na	1.1E+06	na	1.1E+06	na
Di-n-Butyl Phthalate	0	na	4.5E+03	na	4.5E+03	na	na	4.5E+03	na	na	4.5E+03	na	4.5E+03	na	na	4.5E+03	na	4.5E+03	na	na	4.5E+03	na	4.5E+03	na	4.5E+03	na
2,4 Dinitrophenol	0	na	5.3E+03	na	5.3E+03	na	na	5.3E+03	na	na	5.3E+03	na	5.3E+03	na	na	5.3E+03	na	5.3E+03	na	na	5.3E+03	na	5.3E+03	na	5.3E+03	na
2-Methyl-4,6-Dinitrophenol	0	na	2.8E+02	na	2.8E+02	na	na	2.8E+02	na	na	2.8E+02	na	2.8E+02	na	na	2.8E+02	na	2.8E+02	na	na	2.8E+02	na	2.8E+02	na	2.8E+02	na
2,4-Dinitrotoluene <sup>c</sup>	0	na	3.4E+01	na	3.4E+01	na	na	3.4E+01	na	na	3.4E+01	na	3.4E+01	na	na	3.4E+01	na	3.4E+01	na	na	3.4E+01	na	3.4E+01	na	3.4E+01	na
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	na	5.1E-08	na	5.1E-08	na	na	5.1E-08	na	na	5.1E-08	na	5.1E-08	na	na	5.1E-08	na	5.1E-08	na	na	5.1E-08	na	5.1E-08	na	5.1E-08	na
1,2-Diphenylhydrazine <sup>c</sup>	0	na	2.0E+00	na	2.0E+00	na	na	2.0E+00	na	na	2.0E+00	na	2.0E+00	na	na	2.0E+00	na	2.0E+00	na	na	2.0E+00	na	2.0E+00	na	2.0E+00	na
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	5.6E-02	2.2E-01	5.6E-02	na	na	2.2E-01	5.6E-02	na	5.6E-02	na	na	2.2E-01	5.6E-02	na	5.6E-02	na	na	2.2E-01	5.6E-02	na	5.6E-02	na
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	5.6E-02	2.2E-01	5.6E-02	na	na	2.2E-01	5.6E-02	na	5.6E-02	na	na	2.2E-01	5.6E-02	na	5.6E-02	na	na	2.2E-01	5.6E-02	na	5.6E-02	na
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	na	5.6E-02	2.2E-01	5.6E-02	na	na	2.2E-01	5.6E-02	na	5.6E-02	na	na	2.2E-01	5.6E-02	na	5.6E-02	na	na	2.2E-01	5.6E-02	na	5.6E-02	na
Endosulfan Sulfate	0	na	8.9E+01	na	8.9E+01	na	na	8.9E+01	na	na	8.9E+01	na	8.9E+01	na	na	8.9E+01	na	8.9E+01	na	na	8.9E+01	na	8.9E+01	na	8.9E+01	na
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	na	8.6E-02	3.6E-02	na	6.0E-02	na	na	8.6E-02	3.6E-02	na	6.0E-02	na	na	8.6E-02	3.6E-02	na		

Parameter (ug/l unless noted)	Background		Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations										
	Conc.	HH (PWS)	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH				
																										HH	HH	HH	HH
Ethylbenzene	0	na	--	na	2.1E+03	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	
Fluoranthene	0	na	--	na	1.4E+02	--	na	1.4E+02	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	na	1.4E+02	
Fluorene	0	na	--	na	5.3E+03	--	na	5.3E+03	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	na	5.3E+03	
Foaming Agents	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	--	na	--	--	na	--	
Guthion	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	--	na	--	--	na	--	
Heptachlor <sup>c</sup>	0	na	1.0E-02	na	--	--	na	1.0E-02	--	--	na	1.0E-02	--	--	na	1.0E-02	--	--	na	1.0E-02	--	--	na	1.0E-02	--	--	na	1.0E-02	
Heptachlor Epoxide <sup>c</sup>	0	na	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	7.9E-04	5.2E-01	3.8E-03	7.9E-04	5.2E-01	3.8E-03	7.9E-04	5.2E-01	3.8E-03	7.9E-04	5.2E-01	3.8E-03	7.9E-04	5.2E-01	3.8E-03	7.9E-04	5.2E-01	3.8E-03	7.9E-04	5.2E-01	3.8E-03	
Heptachlor Epoxide <sup>c</sup>	0	na	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	3.9E-04	5.2E-01	3.8E-03	3.9E-04	5.2E-01	3.8E-03	3.9E-04	5.2E-01	3.8E-03	3.9E-04	5.2E-01	3.8E-03	3.9E-04	5.2E-01	3.8E-03	3.9E-04	5.2E-01	3.8E-03	3.9E-04	5.2E-01	3.8E-03	
Hexachlorobenzene <sup>c</sup>	0	na	--	na	2.9E-03	--	na	2.9E-03	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	na	2.9E-03	
Hexachlorobutadiene <sup>c</sup>	0	na	--	na	1.8E+02	--	na	1.8E+02	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	na	1.8E+02	
Hexachlorocyclohexane	0	na	--	na	4.9E-02	--	na	4.9E-02	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	na	4.9E-02	
Alpha-BHC <sup>c</sup>	0	na	--	na	1.7E-01	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	
Beta-BHC <sup>c</sup>	0	na	--	na	1.7E-01	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	na	1.7E-01	
Hexachlorocyclohexane	0	na	na	na	1.8E+00	9.5E-01	na	1.8E+00	9.5E-01	na	1.8E+00	9.5E-01	na	1.8E+00	9.5E-01	na	1.8E+00	9.5E-01	na	1.8E+00	9.5E-01	na	1.8E+00	9.5E-01	na	1.8E+00	9.5E-01	na	1.8E+00
Gamma-BHC <sup>c</sup> (Lindane)	0	na	--	na	1.1E+03	--	na	1.1E+03	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	na	1.1E+03	
Hexachlorocyclopentadiene	0	na	--	na	3.3E+01	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	na	3.3E+01	
Hexachloroethane <sup>c</sup>	0	na	2.0E+00	na	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	na	2.0E+00	
Hydrogen Sulfide	0	na	--	na	1.8E-01	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-01	
Indeno (1,2,3-cd) pyrene <sup>c</sup>	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	na	--	--	
Iron	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	na	--	--	
Isophorone <sup>c</sup>	0	na	--	na	9.6E+03	--	na	9.6E+03	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	na	9.6E+03	
Kepona	0	na	0.0E+00	na	--	--	na	0.0E+00	--	--	na	0.0E+00	--	--	na	0.0E+00	--	--	na	0.0E+00	--	--	na	0.0E+00	--	--	na	0.0E+00	
Lead	0	na	1.5E+02	na	1.7E+01	1.5E+02	na	1.7E+01	1.5E+02	na	1.7E+01	1.5E+02	na	1.7E+01	1.5E+02	na	1.7E+01	1.5E+02	na	1.7E+01	1.5E+02	na	1.7E+01	1.5E+02	na	1.7E+01	1.5E+02	na	1.7E+01
Malathion	0	na	1.0E-01	na	--	--	na	1.0E-01	--	--	na	1.0E-01	--	--	na	1.0E-01	--	--	na	1.0E-01	--	--	na	1.0E-01	--	--	na	1.0E-01	
Manganese	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	na	--	--	
Mercury	0	na	1.4E+00	na	7.7E-01	1.4E+00	na	7.7E-01	1.4E+00	na	7.7E-01	1.4E+00	na	7.7E-01	1.4E+00	na	7.7E-01	1.4E+00	na	7.7E-01	1.4E+00	na	7.7E-01	1.4E+00	na	7.7E-01	1.4E+00	na	7.7E-01
Methyl Bromide	0	na	--	na	1.5E+03	--	na	1.5E+03	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	na	1.5E+03	
Methylene Chloride <sup>c</sup>	0	na	--	na	5.9E+03	--	na	5.9E+03	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	na	5.9E+03	
Methoxychlor	0	na	3.0E-02	na	--	--	na	3.0E-02	--	--	na	3.0E-02	--	--	na	3.0E-02	--	--	na	3.0E-02	--	--	na	3.0E-02	--	--	na	3.0E-02	
Mirex	0	na	0.0E+00	na	--	--	na	0.0E+00	--	--	na	0.0E+00	--	--	na	0.0E+00	--	--	na	0.0E+00	--	--	na	0.0E+00	--	--	na	0.0E+00	
Nickel	0	na	2.1E+02	na	4.6E+03	2.1E+02	na	4.6E+03	2.1E+02	na	4.6E+03	2.1E+02	na	4.6E+03	2.1E+02	na	4.6E+03	2.1E+02	na	4.6E+03	2.1E+02	na	4.6E+03	2.1E+02	na	4.6E+03	2.1E+02	na	4.6E+03
Nitrate (as N)	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	na	--	--	
Nitrobenzene	0	na	--	na	6.9E+02	--	na	6.9E+02	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	na	6.9E+02	
N-Nitrosodimethylamine <sup>c</sup>	0	na	--	na	3.0E+01	--	na	3.0E+01	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	na	3.0E+01	
N-Nitrosodiphenylamine <sup>c</sup>	0	na	--	na	6.0E+01	--	na	6.0E+01	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	na	6.0E+01	
N-Nitrosodi-n-propylamine <sup>c</sup>	0	na	--	na	5.1E+00	--	na	5.1E+00	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	na	5.1E+00	
Nonylphenol	0	na	2.8E+01	na	6.6E+00	2.8E+01	na	6.6E+00	2.8E+01	na	6.6E+00	2.8E+01	na	6.6E+00	2.8E+01	na	6.6E+00	2.8E+01	na	6.6E+00	2.8E+01	na	6.6E+00	2.8E+01	na	6.6E+00	2.8E+01	na	6.6E+00
Parathion	0	na	6.5E-02	na	1.3E-02	6.5E-02	na	1.3E-02	6.5E-02	na	1.3E-02	6.5E-02	na	1.3E-02	6.5E-02	na	1.3E-02	6.5E-02	na	1.3E-02	6.5E-02	na	1.3E-02	6.5E-02	na	1.3E-02	6.5E-02	na	1.3E-02
PCB Total <sup>c</sup>	0	na	1.4E-02	na	6.4E-04	1.4E-02	na	6.4E-04	1.4E-02	na	6.4E-04	1.4E-02	na	6.4E-04	1.4E-02	na	6.4E-04	1.4E-02	na	6.4E-04	1.4E-02	na	6.4E-04	1.4E-02	na	6.4E-04	1.4E-02	na	6.4E-04
Pentachlorophenol <sup>c</sup>	0	na	7.7E-03	na	3.0E+01	7.7E-03	na	3.0E+01	7.7E-03	na	3.0E+01	7.7E-03	na	3.0E+01	7.7E-03	na	3.0E+01	7.7E-03	na	3.0E+01	7.7E-03	na	3.0E+01	7.7E-03	na	3.0E+01	7.7E-03	na	3.0E+01
Phenol	0	na	--	na	8.6E+05	--	na	8.6E+05	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	na	8.6E+05	
Pyrene	0	na	--	na	4.0E+03	--	na	4.0E+03	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	na	4.0E+03	
Radionuclides	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	na	--	--	
Gross Alpha Activity	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	na	--	--	
Beta and Photon Activity	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	na	--	--	
(mrem/yr)	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	na	--	--	
Radium 226 + 228 (pCi/L)	0	na	--	na	--	--	na	--	--	--	na	--	--	--	na	--	--	--											

Parameter (ug/l unless noted)	Background		Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
	Conc.		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0		2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	2.0E+01	5.0E+00	--	2.0E+01	5.0E+00	--	--	4.2E+03
Silver	0		4.8E+00	--	na	--	4.8E+00	--	na	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	0		--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane <sup>c</sup>	0		--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	--	--	--	4.0E+01
Tetrachloroethylene <sup>c</sup>	0		--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	--	3.3E+01
Thallium	0		--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	--	--	--	4.7E-01
Toluene	0		--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	--	--	--	6.0E+03
Total dissolved solids	0		--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	--	--
Toxaphene <sup>c</sup>	0		7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	7.3E-01	2.0E-04	--	7.3E-01	2.0E-04	--	--	2.8E-03
Tributyltin	0		4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	4.6E-01	7.2E-02	--	4.6E-01	7.2E-02	--	--	7.0E+03
1,2,4-Trichlorobenzene	0		--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	--	--	--	7.0E+01
1,1,2-Trichloroethane <sup>c</sup>	0		--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	--	1.6E+01
Trichloroethylene <sup>c</sup>	0		--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	--	3.0E+01
2,4,6-Trichlorophenol <sup>c</sup>	0		--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	--	2.4E+01
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)	0		--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride <sup>c</sup>	0		--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	--	2.4E+01
Zinc	0		1.4E+02	1.4E+02	na	2.8E+04	1.4E+02	1.4E+02	na	2.8E+04	--	--	--	--	1.4E+02	1.4E+02	--	1.4E+02	1.4E+02	--	--	2.6E+01

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing information. Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic  
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	7.9E-01
Chromium III	5.2E+01
Chromium VI	6.4E+00
Copper	6.3E+00
Iron	na
Lead	1.0E+01
Manganese	na
Mercury	4.6E-01
Nickel	1.4E+01
Selenium	3.0E+00
Silver	1.9E+00
Zinc	5.5E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

# FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: HL Mooney WRF

Permit No.: VA0025101 (February to March)

Receiving Stream: Neabsco Creek

Version: OWP Guidance Memo 00-2011 (8/24/00)

(FROM THE 2009 REISSUANCE)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	170 mg/L
90% Temperature (Annual) =	deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	deg C
90% Temperature (Wet season) =	deg C	3Q10 (Annual) =	0 MGD	- 3Q10 Mix =	100 %	90% Temp (Wet season) =	10.4 deg C
90% Maximum pH =	SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	8.42 SU
10% Maximum pH =	SU	3Q10 (Wet season) =	0 MGD	- 3Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	3Q10 (Wet season) =	0 MGD	- 3Q10 Mix =	100 %	Discharge Flow =	24 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n	Annual Average =	n/a MGD				
Early Life Stages Present Y/N? =	y						

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	2.7E+03	--	na	2.7E+03	--	--	--	--	--	--	na	2.7E+03	na
Acrolein	0	--	--	na	7.8E+02	--	na	7.8E+02	--	--	--	--	--	--	na	7.8E+02	na
Acrylonitrile <sup>c</sup>	0	--	--	na	6.6E+00	--	na	6.6E+00	--	--	--	--	--	--	na	6.6E+00	na
Aldrin <sup>c</sup>	0	3.0E+00	--	na	1.4E-03	--	na	1.4E-03	--	--	--	--	--	3.0E+00	na	1.4E-03	na
Ammonia-N (mg/l)	0	3.74E+00	1.25E+00	na	--	3.7E+00	1.2E+00	--	--	--	--	--	3.7E+00	1.2E+00	na	--	na
Ammonia-N (mg/l) (High Flow)	0	3.74E+00	1.25E+00	na	--	3.7E+00	1.2E+00	--	--	--	--	--	3.7E+00	1.2E+00	na	--	na
Anthracene	0	--	--	na	1.1E+05	--	na	1.1E+05	--	--	--	--	--	--	na	1.1E+05	na
Antimony	0	--	--	na	4.3E+03	--	na	4.3E+03	--	--	--	--	--	--	na	4.3E+03	na
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	--	--	--	--	--	3.4E+02	1.5E+02	na	--	na
Barium	0	--	--	na	--	--	--	--	--	--	--	--	--	--	na	--	na
Benzene <sup>c</sup>	0	--	--	na	7.1E+02	--	na	7.1E+02	--	--	--	--	--	--	na	7.1E+02	na
Benzidine <sup>c</sup>	0	--	--	na	5.4E-03	--	na	5.4E-03	--	--	--	--	--	--	na	5.4E-03	na
Benzo (a) anthracene <sup>c</sup>	0	--	--	na	4.9E-01	--	na	4.9E-01	--	--	--	--	--	--	na	4.9E-01	na
Benzo (b) fluoranthene <sup>c</sup>	0	--	--	na	4.9E-01	--	na	4.9E-01	--	--	--	--	--	--	na	4.9E-01	na
Benzo (k) fluoranthene <sup>c</sup>	0	--	--	na	4.9E-01	--	na	4.9E-01	--	--	--	--	--	--	na	4.9E-01	na
Benzo (a) pyrene <sup>c</sup>	0	--	--	na	4.9E-01	--	na	4.9E-01	--	--	--	--	--	--	na	4.9E-01	na
Bis(2-Chloroethyl) Ether	0	--	--	na	1.4E+01	--	na	1.4E+01	--	--	--	--	--	--	na	1.4E+01	na
Bis(2-Chloroisopropyl) Ether	0	--	--	na	1.7E+05	--	na	1.7E+05	--	--	--	--	--	--	na	1.7E+05	na
Bromoform <sup>c</sup>	0	--	--	na	3.6E+03	--	na	3.6E+03	--	--	--	--	--	--	na	3.6E+03	na
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	na	5.2E+03	--	--	--	--	--	--	na	5.2E+03	na
Cadmium	0	7.1E+00	1.7E+00	na	--	7.1E+00	1.7E+00	--	--	--	--	--	7.1E+00	1.7E+00	na	--	na
Carbon Tetrachloride <sup>c</sup>	0	--	--	na	4.4E+01	--	na	4.4E+01	--	--	--	--	--	--	na	4.4E+01	na
Chlordane <sup>c</sup>	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	2.4E+00	4.3E-03	na	2.2E-02	na
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	8.6E+05	2.3E+05	na	--	na
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	1.9E+01	1.1E+01	na	--	na
Chlorobenzene	0	--	--	na	2.1E+04	--	na	2.1E+04	--	--	--	--	--	--	na	2.1E+04	na

WLAS presented <  
with only one  
decimal place

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Chlorodibromomethane <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	3.4E+02
Chloroform <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	2.9E+04
2-Chloroanaphthalene	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	2.9E+04
2-Chlorophenol	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	4.3E+03
Chlorpyrifos	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	4.0E+02
Chromium III	0	8.3E-02	4.1E-02	na	8.3E-02	4.1E-02	na	8.3E-02	4.1E-02	na	8.3E-02	4.1E-02	na	8.3E-02	4.1E-02	na
Chromium VI	0	8.8E+02	1.1E+02	na	8.8E+02	1.1E+02	na	8.8E+02	1.1E+02	na	8.8E+02	1.1E+02	na	8.8E+02	1.1E+02	na
Chromium, Total	0	1.6E+01	1.1E+01	na	1.6E+01	1.1E+01	na	1.6E+01	1.1E+01	na	1.6E+01	1.1E+01	na	1.6E+01	1.1E+01	na
Chrysene <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	2.2E+01	1.4E+01	na	2.2E+01	1.4E+01	na	2.2E+01	1.4E+01	na	2.2E+01	1.4E+01	na	2.2E+01	1.4E+01	na
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+01	5.2E+00	na	2.2E+01	5.2E+00	na	2.2E+01	5.2E+00	na	2.2E+01	5.2E+00	na
DDD <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	8.4E-03
DDE <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	5.9E-03
DDT <sup>c</sup>	0	1.1E+00	1.0E-03	na	1.1E+00	1.0E-03	na	1.1E+00	1.0E-03	na	1.1E+00	1.0E-03	na	1.1E+00	1.0E-03	na
Demeton	0	--	1.0E-01	na	--	1.0E-01	na	--	1.0E-01	na	--	1.0E-01	na	--	1.0E-01	na
Dibenz(a,h)anthracene <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	4.9E-01
Dibutyl phthalate	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.2E+04
(Methylene Chloride) <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.6E+04
1,2-Dichlorobenzene	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	2.6E+03
3,3-Dichlorobenzidine <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	2.6E+03
Dichlorobromomethane <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	7.7E-01
1,2-Dichloroethane <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	4.6E+02
1,1-Dichloroethylene	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	9.9E+02
1,2-trans-dichloroethylene	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.7E+04
2,4-Dichlorophenol	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.4E+05
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	7.9E+02
1,2-Dichloropropane <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	3.9E+02
1,3-Dichloropropane	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.7E+03
Dieldrin <sup>c</sup>	0	2.4E-01	5.6E-02	na	2.4E-01	5.6E-02	na	2.4E-01	5.6E-02	na	2.4E-01	5.6E-02	na	2.4E-01	5.6E-02	na
Diethyl Phthalate	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.2E+05
Di-2-Ethylhexyl Phthalate <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	5.9E+01
2,4-Dimethylphenol	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	2.3E+03
Dimethyl Phthalate	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	2.9E+06
Di-n-Butyl Phthalate	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.2E+04
2,4-Dinitrophenol	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	1.4E+04
2-Methyl-4,5-Dinitrophenol	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	7.7E+02
2,4-Dinitrotoluene <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	9.1E+01
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine <sup>c</sup>	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	5.4E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.2E-01	5.6E-02	na	2.2E-01	5.6E-02	na	2.2E-01	5.6E-02	na	2.2E-01	5.6E-02	na
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.2E-01	5.6E-02	na	2.2E-01	5.6E-02	na	2.2E-01	5.6E-02	na	2.2E-01	5.6E-02	na
Endosulfan Sulfate	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.6E-02	3.6E-02	na	8.6E-02	3.6E-02	na	8.6E-02	3.6E-02	na	8.6E-02	3.6E-02	na
Endrin Aldehyde	0	--	--	na	--	--	na	--	--	--	--	--	--	--	na	8.1E-01

Parameter (µg/l unless noted)	Background		Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor <sup>c</sup>	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide <sup>c</sup>	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene <sup>c</sup>	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene <sup>c</sup>	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	na	1.3E-01
Alpha-BHC <sup>c</sup>	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	na	4.6E-01
Hexachlorocyclohexane	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	9.5E-01	--	na	6.3E-01
Gamma-BHC <sup>c</sup> (Lindane)	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	na	1.7E+04
Hexachlorocyclopentadiene	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	na	8.9E+01
Hexachloroethane <sup>c</sup>	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	2.0E+00	na	--
Hydrogen Sulfide	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	na	4.9E-01
Indeno (1,2,3-cd) pyrene <sup>c</sup>	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	na	2.6E+04
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--
Isophorone <sup>c</sup>	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	0.0E+00	na	--
Kepon	0	2.3E+02	2.7E+01	na	--	2.3E+02	2.7E+01	na	--	2.3E+02	2.7E+01	na	--	2.3E+02	2.7E+01	na	--
Lead	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	1.0E-01	na	--
Malathion	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02
Methyl Bromide	0	--	3.0E-02	na	4.0E+03	--	3.0E-02	na	4.0E+03	--	3.0E-02	na	4.0E+03	--	3.0E-02	na	4.0E+03
Methoxychlor	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Mirex	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	na	2.1E+04
Monochlorobenzene	0	2.9E+02	3.2E+01	na	4.6E+03	2.9E+02	3.2E+01	na	4.6E+03	2.9E+02	3.2E+01	na	4.6E+03	2.9E+02	3.2E+01	na	4.6E+03
Nickel	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--
Nitrate (as N)	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	na	1.9E+03
Nitrobenzene	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	na	8.1E+01
N-Nitrosodimethylamine <sup>c</sup>	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodiphenylamine <sup>c</sup>	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	na	1.4E+01
N-Nitrosodi-n-propylamine <sup>c</sup>	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--
Parathion	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--	--	1.4E-02	na	--
PCB Total <sup>c</sup>	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	na	1.7E-03

Parameter (ug/l unless noted) Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Pentachlorophenol <sup>c</sup>	7.7E-03	5.9E-03	na	7.7E-03	5.9E-03	na	8.2E+01						7.7E-03	5.9E-03	na
Phenol			na	4.6E+06		na	4.6E+06								na
Pyrene			na	1.1E+04		na	1.1E+04								na
Radionuclides (pCi/l) except Beta/Photon			na			na									na
Gross Alpha Activity Beta and Photon Activity (mrem/yr)			na	1.5E+01		na	1.5E+01								na
Strontium-90			na	4.0E+00		na	4.0E+00								na
Tritium			na	8.0E+00		na	8.0E+00								na
Selenium	2.0E+01	5.0E+00	na	1.1E+04		na	1.1E+04						2.0E+01	5.0E+00	na
Silver	8.6E+00		na			na	8.6E+00						8.6E+00		na
Sulfate			na			na									na
1,1,2,2-Tetrachloroethane <sup>c</sup>			na	1.1E+02		na	1.1E+02								na
Tetrachloroethylene <sup>c</sup>			na	8.9E+01		na	8.9E+01								na
Thallium			na	6.3E+00		na	6.3E+00								na
Toluene			na	2.0E+05		na	2.0E+05								na
Total dissolved solids			na			na									na
Toxaphene <sup>c</sup>	7.3E-01	2.0E-04	na	7.5E-03		na	7.5E-03						7.3E-01	2.0E-04	na
Tributyltin	4.6E-01	6.3E-02	na			na	4.6E-01						4.6E-01	6.3E-02	na
1,2,4-Trichlorobenzene			na	9.4E+02		na	9.4E+02								na
1,1,2-Trichloroethane <sup>c</sup>			na	4.2E+02		na	4.2E+02								na
Trichloroethylene <sup>c</sup>			na	8.1E+02		na	8.1E+02								na
2,4,6-Trichlorophenol <sup>c</sup>			na	6.5E+01		na	6.5E+01								na
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)			na			na									na
Vinyl Chloride <sup>c</sup>			na	6.1E+01		na	6.1E+01								na
Zinc	1.8E+02	1.9E+02	na	6.9E+04		na	6.9E+04						1.8E+02	1.9E+02	na

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	1.0E+00
Chromium III	6.9E+01
Chromium VI	6.4E+00
Copper	8.5E+00
Iron	na
Lead	1.6E+01
Manganese	na
Mercury	5.1E-02
Nickel	1.9E+01
Selenium	3.0E+00
Silver	3.4E+00
Zinc	7.3E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

- Notes:
- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
  - Discharge flow is highest monthly average or Form 2C maximum for industries and design flow for Municipals
  - Metals measured as Dissolved, unless specified otherwise
  - "C" indicates a carcinogenic parameter
  - Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix
  - Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic  
= (0.1(WQC - background conc.) + background conc.) for human health
  - WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Neabco Creek @ Raii Road Bridge  
 STATION : 1A9EA000.57

Collection Date	Time	Depth	Do Probe	Fdt	Opt Temp	Celcius	Field Ph	Specific C:	Comment	pH (Nov-Jan)	Temp(Nov-Jan)	pH(Apr-Oct)	Temp(Apr-Oct)
3/1/10	9:50	0.5	13.9		4.6	7.8	560			7.2	8	5	7.3
3/1/10	9:50	1	13.9		4.6	7.8	560			7.2	8	5	7.3
3/1/10	9:50	1.5	14.1		4.5	7.8	558			7.57	11.1	7.5	17.2
3/1/10	9:50	2	14.1		4.5	7.9	552			7.57	4.67	6.3	27.7
3/1/10	9:50	2.5	14.1		4.5	7.9	553			7.8	7.41	7.6	29.8
3/1/10	9:50	3	13.9		4.5	7.8	552			7.91	8.25	7.2	27
4/5/10	9:39	0.5	9.1		18.4	7.3	369		CHLOROPHYLL 2X150ML	7.42	3.67	7.2	23.3
4/5/10	9:39	1	9		18.1	7.3	366			7.48	3.67	7.2	23.3
4/5/10	9:39	1.5	8.9		18	7.3	364			7.47	3.67	7.2	23.3
4/5/10	9:39	2	8.9		18	7.3	360			7.8	4.6	6.94	26.2
4/5/10	9:39	2.5	9.2		17.9	7.3	356			7.4	10	8.62	28.8
4/5/10	9:39	3	8.9		18	7.3	363			8.34	9.95	7.02	27.9
5/13/10	10:12	0.5	8.5		17.2	7.5	386			7.78	4.53	8.4	23.2
5/13/10	10:12	1	8.4		17.2	7.5	382			8.11	4.86	8.6	15.32
5/13/10	10:12	1.5	8.4		17.2	7.6	276					8.9	27.85
5/13/10	10:12	2	8.4		17.2	7.6	283					7.3	24.04
5/13/10	10:12	2.5	8.4		17.2	7.6	287					8.3	27.88
6/14/10	10:20	0.5		8.8	27.7	8.3	319					6.7	24.73
6/14/10	10:20	1		8.8	27.7	8.3	319					8.36	18.08
6/14/10	10:20	1.5		8.7	27.7	8.3	321					7.65	18.33
6/14/10	10:20	2		8.6	27.6	8.3	320					7.08	21.26
6/14/10	10:20	2.5		8.5	27.6	8.3	316					7.19	28.05
6/14/10	10:20	3		8.5	27.6	8.3	316					7.39	22.9
7/19/10	9:25	0.5	9		29.8	7.6	683					7.22	21.54
7/19/10	9:25	1	4.2		29.1	7.3	643					7.38	12.03
7/19/10	9:25	1.5	3.5		29	7.2	637						
7/19/10	9:25	2	2.9		28.7	7.1	616						
7/19/10	9:25	2.5	2.2		28.4	7.1	609						
8/23/10	9:55	0.5	4.6		27	7.2	837						
8/23/10	9:55	1	4.5		26.9	7.2	825						
8/23/10	9:55	1.5	4.6		27	7.2	831						
8/23/10	9:55	2	4.7		27	7.2	834						
8/23/10	9:55	2.5	4.5		27	7.2	832						
8/23/10	9:55	3	4.6		27	7.3	841						
9/20/10	9:55	0.5	4.9		23.3	7.2	1585						
9/20/10	9:55	1	4.8		23.3	7.2	1632						
9/20/10	9:55	1.5	4.8		23.3	7.2	1623						
9/20/10	9:55	2	4.9		23.3	7.2	1626						
9/20/10	9:55	2.5	5.1		23.4	7.2	1640						
9/20/10	9:55	3	4.7		23.3	7.2	1639						
1/31/11	10:17	0.5	10.9		5	7.2	1638						
1/31/11	10:17	1	10.5		5	7.2	1639						
1/31/11	10:17	1.5	10.5		4.9	7.2	1643						
1/31/11	10:17	2	10.5		5	7.3	1641						
1/31/11	10:17	2.5	10.4		5	7.3	1652						
3/14/11	9:55	0.5		9.6	10	7.4	433						
3/14/11	9:55	1		9.5	10	7.4	432						
3/14/11	9:55	1.5		9.5	9.9	7.4	437						
3/14/11	9:55	2		9.5	9.8	7.4	438						
3/14/11	9:55	2.5		9.5	9.6	7.4	434						
4/7/11	9:25	0.5	11.9		11.5	8.4	290						
4/7/11	9:25	1	11.7		11.4	8.4	290						
4/7/11	9:25	1.5	11.8		11.4	8.4	290						
4/7/11	9:25	2	11.6		11.4	8.3	290						
4/7/11	9:25	2.5	11.5		11.4	8.3	290						
4/7/11	9:25	3	11.3		11.4	8.2	291						
5/2/11	10:10	0.5	10.4		17.9	8.6	249						

**pH 90th percentile calculations**  
 8.396 90th percentile of all pH values  
 7.955 90th percentile for Nov-Jan  
 8.248 90th percentile for Feb-Mar  
 8.54 90th percentile for Apr-Oct

**Temperature 90th percentile calculations**  
 27.877 90th percentile of all temp values  
 9.675 90th percentile for Nov-Jan  
 9.98 90th percentile for Feb-Mar  
 28.005 90th percentile for Apr-Oct

5/2/11 10:10	1	10.4	17.9	8.7	245
5/2/11 10:10	1.5	10.5	17.9	8.7	242
5/2/11 10:10	2	10.6	17.9	8.7	242
5/2/11 10:10	2.5	10.6	17.9	8.7	242
5/2/11 10:10	3	10.7	17.9	8.7	241
6/7/11 9:40	0.5	10.9	26.2	8.9	275
6/7/11 9:40	1	11	26.2	8.9	278
6/7/11 9:40	1.5	10.8	26.1	8.9	276
6/7/11 9:40	2	10.3	25.9	8.7	286
6/7/11 9:40	2.5	10	25.8	8.5	302
6/7/11 9:40	3	9.9	25.7	8.5	304
7/27/11 10:00	0.5	3.6	28.8	7.3	454
7/27/11 10:00	1	3.5	28.7	7.3	457
7/27/11 10:00	1.5	3.5	28.7	7.3	456
7/27/11 10:00	2	3.4	28.7	7.3	455
7/27/11 10:00	2.5	3.5	28.7	7.3	458
7/27/11 10:00	3	3.5	28.7	7.3	456
8/18/11 13:15	0.5		27.9	8.3	561
8/18/11 13:15	1	9.3	27.9	8.3	561
8/18/11 13:15	1.5		27.9	8.3	561
8/18/11 13:15	2		27.9	8.3	561
8/18/11 13:15	2.5		27.9	8.3	561
8/18/11 13:15	3		27.8	8.3	561
9/26/11 10:00	0.5	4.3	23.2	6.7	305
9/26/11 10:00	1	4.7	23.2	6.7	308
9/26/11 10:00	1.5	4.6	23.2	6.7	306
9/26/11 10:00	2	4	23.2	6.7	303
9/26/11 10:00	2.5	4.7	23.2	6.7	305
9/26/11 10:00	3	4.4	23.2	6.7	306
11/28/11 9:40	0.5	11.7	11.1	8	319
11/28/11 9:40	1	11.7	11.1	8	320
11/28/11 9:40	1.5	11.7	11	8	319
11/28/11 9:40	2	11.8	11	8	318
11/28/11 9:40	2.5	11.7	11	7.9	318
11/28/11 9:40	3	11.7	11	7.9	317
11/28/11 9:40	3.5	11.9	10.9	7.9	317
1/30/12 9:44	0.5	12.23	4.67	7.57	308
1/30/12 9:44	1	12.19	4.67	7.53	312
1/30/12 9:44	1.5	12.22	4.65	7.5	312
1/30/12 9:44	2	12.27	4.63	7.48	307
1/30/12 9:44	2.5	12.24	4.64	7.43	320
3/12/12 9:55	0.5	13.14	9.95	8.34	306
3/12/12 9:55	1	13.13	9.91	8.35	307
3/12/12 9:55	1.5	13.1	9.87	8.32	307
3/12/12 9:55	2	13.08	9.86	8.28	307
3/12/12 9:55	2.5	13.08	9.85	8.27	307
3/12/12 9:55	3	12.99	9.84	8.12	307
4/2/12 9:55	0.5		15.32	7.48	460
4/2/12 9:55	1	8.62	15.3	7.49	460
4/2/12 9:55	1.5		15.32	7.48	461
4/2/12 9:55	2	8.65	15.26	7.48	453
4/2/12 9:55	2.5	8.67	15.3	7.47	455
4/2/12 9:55	3	8.79	15.24	7.46	443
5/29/12 9:15	0.5	6.24	27.85	7.47	310
5/29/12 9:15	1	6.04	27.6	7.39	319
5/29/12 9:15	1.5	5.97	27.55	7.37	320
5/29/12 9:15	2	5.85	27.46	7.3	325
5/29/12 9:15	2.5	3.86	26.24	7	384
6/13/12 10:00	0.5	3.92	24.04	6.94	266
6/13/12 10:00	1	3.94	24.05	6.93	266
6/13/12 10:00	1.5	3.9	24.05	6.93	367
6/13/12 10:00	2	3.9	24.04	6.92	368

6/13/12 10:00	2.5	3.88	24.02	6.92	368
6/13/12 10:00	3	3.9	24.05	6.92	367
7/23/12 9:05	0.5	9.75	27.88	8.62	331
7/23/12 9:05	1	8.7	27.49	8.18	339
7/23/12 9:05	1.5	8.41	27.41	8.08	339
7/23/12 9:05	2	8.05	27.35	7.92	344
7/23/12 9:05	2.5	7.72	27.26	7.8	344
7/23/12 9:05	3	6.5	27.07	7.55	349
7/23/12 9:05	3.5	6.02	27.04	7.48	354
8/27/12 10:30	0.5	3.31	24.73	7.02	470
8/27/12 10:30	1	3.27	24.72	7.01	469
8/27/12 10:30	1.5	3.24	24.7	7.01	470
8/27/12 10:30	2	3.23	24.69	7.01	469
8/27/12 10:30	2.5	3.15	24.69	7.01	470
8/27/12 10:30	3		7.41	7.8	515
12/3/12 9:20	0.5	11.6	7.27	7.81	511
12/3/12 9:20	1	11.58	7.24	7.8	511
12/3/12 9:20	1.5	11.56	7.3	7.79	513
12/3/12 9:20	2	11.56	7.3	7.77	514
12/3/12 9:20	2.5	11.46	7.29	7.76	517
12/3/12 9:20	3	11.43	4.53	7.78	382
2/25/13 10:05	0.5	13.17	4.5	7.78	385
2/25/13 10:05	1	13.14	4.58	7.75	382
2/25/13 10:05	1.5	13.19	4.64	7.79	381
2/25/13 10:05	2	13.14	4.64	7.79	381
4/15/13 9:50	0.5	9.43	18.08	8.36	328
4/15/13 9:50	1	9.54	18	8.46	320
4/15/13 9:50	1.5	9.79	17.92	8.59	315
4/15/13 9:50	2	9.96	17.74	8.65	304
4/15/13 9:50	2.5	10.01	17.72	8.64	305
4/15/13 9:50	3	9.97	17.72	8.63	305
5/13/13 9:24	0.5	8.55	18.33	7.65	304
5/13/13 9:24	1	8.26	18.17	7.6	307
5/13/13 9:24	1.5	8.16	18.15	7.59	304
5/13/13 9:24	2	8.12	18.07	7.58	304
5/13/13 9:24	2.5	8.13	18.06	7.58	301
5/13/13 9:24	3	8.05	18.09	7.54	302
6/4/13 9:39	0.5	5.32	21.26	7.08	326
6/4/13 9:39	1	5.36	21.25	7.09	326
6/4/13 9:39	1.5	5.38	21.23	7.1	325
6/4/13 9:39	2	5.41	21.2	7.11	326
6/4/13 9:39	2.5	5.44	21.2	7.11	327
7/15/13 9:38	0.5	6.85	28.05	7.19	258
7/15/13 9:38	1	7.01	28.11	7.19	258
7/15/13 9:38	1.5	7.01	28.04	7.19	258
7/15/13 9:38	2	7	28.03	7.17	257
7/15/13 9:38	2.5	6.19	27.7	7.09	262
7/15/13 9:38	3	5.13	27.36	6.98	271
8/19/13 9:35	0.5	5.54	22.9	7.39	346
8/19/13 9:35	1	5.54	22.89	7.38	346
8/19/13 9:35	1.5	5.45	22.87	7.36	347
8/19/13 9:35	2	5.39	22.85	7.34	350
8/19/13 9:35	2.5	5.41	22.85	7.35	350
8/19/13 9:35	3	5.42	22.87	7.34	349
8/19/13 9:35	3.5	5.27	22.85	7.32	351
9/16/13 9:25	0.5	4.31	21.54	7.22	426
9/16/13 9:25	1	4.31	21.58	7.2	425
9/16/13 9:25	1.5	4.39	21.57	7.19	427
9/16/13 9:25	2	4.38	21.55	7.15	425
9/16/13 9:25	2.5	4.27	21.56	7.1	423
9/16/13 9:25	3	4.35	21.57	7.14	425
10/28/13 9:50	0.5	7.97	12.03	7.38	486

10/28/13 9:50	1	7.63	11.95	7.33	491
10/28/13 9:50	1.5	7.39	11.94	7.36	489
10/28/13 9:50	2	7.27	11.89	7.29	502
10/28/13 9:50	2.5	7.22	11.88	7.28	504
10/28/13 9:50	3	6.96	11.78	7.18	506
11/20/13 9:30	0.5	10.84	8.25	7.91	580
11/20/13 9:30	1	10.74	8.27	7.87	581
11/20/13 9:30	1.5	10.74	8.26	7.81	581
11/20/13 9:30	2	10.78	8.26	7.75	578
11/20/13 9:30	2.5	10.67	8.28	7.76	578
11/20/13 9:30	3	10.66	8.28	7.71	579
12/19/13 9:30	0.5	11.27	3.67	7.42	423
12/19/13 9:30	1	11.21	3.66	7.38	421
12/19/13 9:30	1.5	11.21	3.67	7.33	420
12/19/13 9:30	2	11.2	3.67	7.33	423
12/19/13 9:30	2.5	11.18	3.68	7.32	420
12/19/13 9:30	3	11.23	3.65	7.28	423
3/24/14 10:05	0.5	12.56	4.86	8.11	447
3/24/14 10:05	1	12.55	4.75	7.98	475
3/24/14 10:05	1.5	12.38	4.7	7.81	545
3/24/14 10:05	2	12.38	4.53	7.72	565

BOTTOM DEPTH = 3.3 M